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Chemosurgery in Cutaneous Malignancy

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SUMMARY

Chemosurgical removal of accessible cancer under microscopic control affords:

1. *Unprecedented reliability. "Silent" extensions may be followed out and eradicated.*
2. *Conservatism in removal of tissue. With microscopic examination of each layer of tissue removed, it is possible to avoid removing more than one or two millimeters of healthy tissue beyond the extent of the cancer.*
3. *Good cosmetic results in many instances.*
4. *Relative freedom from operative pain.*
5. *Possibly, lower incidence of metastasis.*
6. *Low operative mortality.*

THE term "chemosurgery" was coined to designate a newly-developed method for the excision of cancer under complete microscopic control. The "chemo" part of the word implies that the tissues are chemically treated, while the "surgery" part indicates that the tissues are surgically excised, but it should be emphasized that these features are merely contributory to the most important feature, the microscopic control.

The idea of a microscopically controlled method of excision had its origin in 1932 in an incidental observation made with Professor M. F. Guyer during the course of experiments on the leukocytic reaction to irritants in cancerous and normal tissues. One of the injected irritants happened to be a 20 per cent solution of zinc chloride. This chemical killed the tissues and yet, upon microscopic study, the histologic structures were observed to be well preserved. What

had happened was that the tissues had been fixed *in situ* the same as if they had been placed in a bottle of fixative solution. During the ensuing four years various details of the technique were worked out in the laboratory.²

Many different chemicals were tried as *in situ* fixatives. Some of them, such as the arsenic, mercury, and antimony salts, were found to be too toxic. Some, such as the caustic alkalies, caused excessive destruction of the tissues so that microscopic diagnosis was impaired. Other chemicals had other disadvantages. Zinc chloride proved to be the most favorable chemical tried because of the following advantages: (1) as used in the treatment of cancer it was essentially non-toxic systemically, (2) it penetrated the tissues readily and in a controllable manner, (3) it was safe to handle because it did not penetrate the intact skin, (4) it was nonodorous, and (5) healing of the tissues following its use was excellent. This chemical, it will be remembered, has long been used in the treatment of cancer both by ethical and unethical practitioners, but there was never any thought of microscopic control.

Various means of administration were tried in animal experimentation. Injection gave erratic penetration and it was found to be too dangerous in that many of the animals died immediately after injection. The application of solutions to the surface of the tumor resulted in poor and erratic penetration. The best means of administration proved to be the application of a paste which contained zinc chloride. The base mainly consisted of stibnite, an inert, finely granular material. This material held the solution of zinc chloride very loosely and allowed it to be released readily to the tissues. Moreover, the stibnite provided a highly permeable matrix, permitting the solution of zinc chloride to sink through the entire applied layer of paste. This in turn made it possible

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to vary the depth of penetration into the tissues by simply altering the depth of application of the fixative paste. By virtue of this feature, the depth of fixation could be accurately varied from a fraction of a millimeter to well over a centimeter in 24 hours.

Would chemical treatment of cancers have a tendency to increase metastasis? To answer this crucial query, 114 rats bearing Flexner-Jobling carcinomas were paired off into control and treated groups. The treated groups received repeated, small, subcutaneous intratumoral injections of zinc chloride every other day for a period of four to eight weeks. The incidence of metastasis was only 28 per cent in the injected rats while the incidence in the controls was 41 per cent. If anything, the treatment reduced rather than increased metastasis.

TECHNIQUE

The technique by which the microscopic control of excision was attained was partially worked out in animals and then perfected during the course of the treatment of about 2,500 patients in the past 13 years. The technique now used may be described with the aid of the accompanying diagram of a cutaneous cancer with three irregular extensions from the main mass (Figure 1).

In cancers covered by skin, the first step in the technique is the application of a keratolytic such as dichloracetic acid (Eastman) to render the surface keratin permeable to zinc chloride. The acid is applied until the skin turns white indicating penetration of the stratum corneum. If the lesion is large or in a sensitive area, it may be desirable to precede this application by the administration of an analgesic of a potency ranging from that of acetylsalicylic acid to that of morphine, and in some cases local anesthesia produced by the injection of 1 per cent procaine is desirable. The next step is the application of the zinc chloride paste which is composed of 40 grams of stibnite, 10 grams of sanguinaria canadensis and 34.5 cc. of a saturated solution of zinc chloride. This paste is applied in a depth calculated to penetrate through as much as possible of the grossly visible portion of the cancer. Analgesics are ordered to be given as necessary.

After a period of time, usually 24 hours, the layer of fixed tissue is excised with a scalpel. The incision

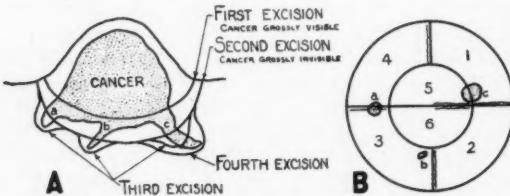


Figure 1.—A, diagram of a cancer with three slender extensions protruding from the main mass. The levels of the four incisions are indicated. B, map of the second excised layer showing the origin of each of the six specimens. Frozen sections were cut through the under surface of each specimen and the areas of cancer at a, b, and c in A were located by scanning the sections under the microscope. Reapplication of the fixative was limited to the cancerous areas. Two more excisions were required to eradicate the cancer.

is made through the fixed tissue just distal to the junction with the living tissue; therefore there is no pain or bleeding from the incision unless it is inadvertently carried too deep. Often, as in the example illustrated in Figure 1, it is possible grossly to visualize the cancer tissue at this stage as a white, crumbly material. When this is the case, the fixative paste is immediately reapplied after the removal of a specimen for microscopic diagnosis.

After another period of 24 hours, another layer of fixed tissue may be excised. If the cancer tissue is not grossly visible at this level, the entire area under suspicion is subjected to systematic microscopic examination. This examination is accomplished as follows: After the careful removal of intact flat specimens, the origin of each of which is indicated by markings with merbromin on the lesion and by a map drawn on a pad of paper (Figure 1B), frozen sections are cut through the under surface of each of the specimens. Facilities for the rapid preparation of the special type of frozen section³ are provided in the chemosurgery clinic so that, after a few minutes, the operator may scan the sections under the microscope, locate the areas of cancer, and mark them in red pencil on the map. Reapplication of the fixative paste is then limited to the areas found to contain cancer (areas a, b, and c in Figure 1B). The following day the tissues from these areas are excised and the procedure is repeated until a completely cancer-free plane is reached. In effect, this technique provides a means for the selective destruction of cancer because only one or two millimeters of healthy tissue beyond the extent of the cancer at any given point need be removed.

After an interval of from three to ten days, depending upon the location of the lesion, the final layer of fixed tissue separates spontaneously or may be removed by the cutting of the holding strands. The resultant granulation tissue is exceptionally healthy, well vascularized, and germ-resistant. It supports the very rapid epithelialization of the wound with consequently soft, smooth, pliable scars which are surprisingly good from a cosmetic standpoint.

INDICATIONS

The microscopic control of excision afforded by the chemosurgical method is useful in the treatment of most accessible forms of cancer.⁴ Articles have been published concerning the chemosurgical treatment of cancer of specific sites such as the lip,⁵ nose,⁶ ear,⁷ eyelids,⁸ face,⁹ extremities and trunk,¹⁰ skin,¹¹ and parotid gland.¹² In addition, the technique is of value in the treatment of cancer of the mouth, nasal cavity, larynx, vulva, vagina, penis, anus and lower rectum. A few remarks concerning the treatment of some specific forms of cancer follow:

Cancer of the nose. Microscopic control of excision is particularly advantageous in the treatment of nasal lesions because it is difficult to estimate accurately the extent of cancer in this structure by clinical examination alone. The reasons for this poor accuracy are twofold: First, cancer tissue has about the

same consistency as the fibrocartilaginous tissue of the nose, making it difficult to differentiate one from the other by palpation. Second, cancer often extends in a surprisingly irregular and unpredictable manner through the various tissues of the nose; this tendency is particularly striking in the tissues of the nasolabial fold (Figure 2), the root of the nose near the inner canthi and the septum. Under the full microscopic control afforded by the chemosurgical method the "silent" extensions may be accurately followed out and eradicated. Lesions which might be radioresistant due to invasion of cartilage or bone or for other reasons are especially suited to chemosurgical treatment, as are neoplasms which are too extensive for ordinary surgical excision.

Cancer of the ear. With the chemosurgical technique, neoplasms of the pinna (Figure 3) and of the external auditory canal may be removed with great

assurance of complete eradication and yet with minimal destruction of normal tissue. The conservatism is especially important in aural lesions because the reconstruction of large defects of the ear is often unsatisfactory from a cosmetic standpoint.

Except in very early lesions the carcinoma almost invariably extends to the perichondrium and therefore the usual technique is to excise chemosurgically the grossly visible portion of the neoplasm down to the cartilage and then to section the periphery until a cancer-free level is reached at all points. The portions of the cartilage acted upon by the fixative are excised unless the area is small, in which case granulation tissue may close over the fixed cartilage and allow epithelialization to take place.

Cancer of the eyelids. Unless there is actual invasion of the eyeball, it is possible to remove almost any cancer of the eyelids without danger of damage to the



Figure 2.—A, basal cell carcinoma. This highly invasive neoplasm was excised in eight microscopically controlled stages by the chemosurgical technique. It extended considerably farther in some directions than was indicated by the initial examination. B, the granulation tissue after separation of the final layer of fixed tissue. C, healed lesion before the plastic repair. The patient was free of cancer after eight years.

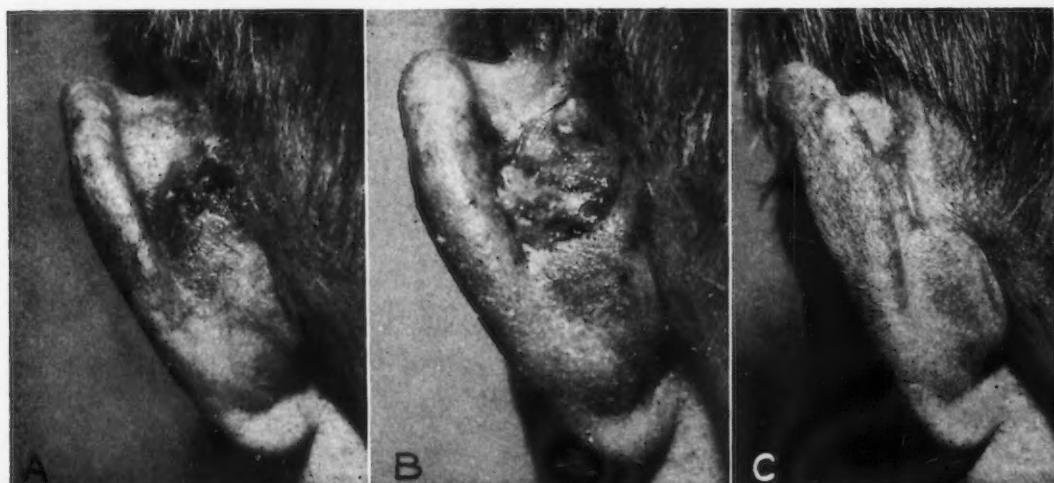


Figure 3.—A, squamous cell carcinoma which had recurred after electrodesiccation on two occasions. Chemosurgical excision was accomplished in four microscopically controlled stages. B, granulation tissue after separation of the final layer of fixed tissue. C, healed lesion. There was no evidence of cancer after two and one-half years.



Figure 4.—A, basal cell carcinoma, recurrent after electro-dessication. B, lesion two days later. The markings on the fixed tissue indicate the origin of the five specimens. Frozen sections revealed the presence of carcinoma in two areas in the center of the lesion. These areas were free of cancer on the next day. C, granulation tissue four days after the last application of fixative. D, healed lesion. There was no evidence of cancer after one and one-half years.

eye. The chemosis and the edema of the eyelids (Figure 4B) due to the chemical inflammation produced by the fixative are protective because they tend to push the treated area away from the eyeball. Another safety factor is the flow of tears which carries away the fixative chemical as it slowly permeates through the eyelid. The cosmetic results are often surprisingly good (Figure 4D), and even if the cancer extends for a considerable distance into the orbit it usually is possible to preserve a functional eye.

Cancer of the face. The chemosurgical treatment of cancer in areas of the face other than the nose, ears, and eyelids has been described.⁹ Often it is feasible to remove extensive recurrent lesions without appreciable disfigurement.

Cancer of the extremities. By means of the microscopically controlled chemosurgical technique, it is often possible to be more conservative than would be feasible with the usual surgical techniques. This conservatism is of particular concern when the involved structure is as economically important as the hand. Radiation carcinomas on the hands of physicians and dentists have proven to be especially responsive to chemosurgical treatment.

Cancer of the lip. Squamous cell carcinoma of the lower lip may be effectively and conservatively treated by the chemosurgical technique. The cosmetic results are excellent. As with squamous cell carcinoma in other sites, it is essential to examine carefully for metastatic regional nodes. If enlarged nodes are present a surgical neck dissection is indicated. If no enlarged nodes are found but the primary lesion is large and the grade of malignancy is relatively high, it may be advisable to recommend a prophylactic neck dissection. In any event, observation for a period of five years is indicated.

Melanoma. Since melanoma frequently spreads into the lymphatic vessels adjacent to the primary lesion, it is essential to remove an area of tissue well beyond the microscopically determined extent of the primary melanomatous mass. The amount of tissue removed depends upon the size and degree of malignancy of the primary melanoma. Surgical dissection of enlarged regional nodes is indicated when operable. Prophylactic dissection of nodes in the absence of enlargement may be advisable in some cases. Very close postoperative observation is essential.

DISCUSSION

The microscopic control of excision makes possible the unprecedented reliability and also the conservatism of the chemosurgical treatment of cancer. The main reason for the need of microscopic control is the frequent presence of small-caliber, clinically undetectable outgrowths from the main mass of cancer.

That the method is capable of results which compare favorably with the best results obtained with other methods is indicated by the accompanying statistics (Table 1). It is to be remembered that the present series includes many extensive and recurrent

TABLE 1.—Rate of Cure of Cancer of the Skin at Three Years

	Per Cent
Present series, ¹¹ 814 cases	93.6
Magnussen, ¹ Radiumhemmet	88.0
Poppe, ¹² Norwegian Radium Hospital	80.8

cancers; in fact, a number would be considered inoperable as far as ordinary surgical techniques are concerned.

The conservatism is obvious when it is considered that only one or two millimeters of tissue beyond the actual extent of the cancer at any point need be removed.

In addition to the advantages of reliability and conservatism, there is also the advantage of a very low operative mortality rate. In a recently published series of 814 cases of cancer of the skin,¹¹ there was only one operative death. This death occurred in a patient with extensive cancerous invasion of the frontal lobe of the brain.

Disadvantageous features of the method include, first, the necessity for special training and constant practice in the use of the technique for optimum results and, second, the necessity of having special facilities and technical assistants for the preparation of the unusual type of frozen sections. In addition, the chemosurgical treatment of extensive cancers may be time-consuming and tedious work for the operator and a painful experience for the patient, but inasmuch as these lesions would otherwise carry a very poor prognosis, these disadvantages seem relatively inconsequential.

In addition to the wide variety of accessible neoplasms amenable to chemosurgical treatment there

also are other lesions, for example those of gangrene,¹³ for which the technique is useful. Thus, there is a sufficiently wide field of usefulness to justify the establishment of chemosurgery clinics at strategic points throughout the country.

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Public Health Aspects of Lymphogranuloma Venereum

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SUMMARY

The clinical symptoms of lymphogranuloma venereum with the serious pathologic changes often occurring in the late stages of the disease warrant greater attention to the disease.

The reported ratio of cases of lymphogranuloma venereum to cases of syphilis and gonorrhea is much higher in San Francisco than in other metropolitan ports of western United States, apparently because of greater use of diagnostic tests for the disease.

Tests of persons likely to be exposed and other persons not likely to be exposed to venereal diseases indicate that a positive reaction to a Frei test implies past or present infection with lymphogranuloma venereum.

Positive reactions to complement fixation tests are notably more frequent than positive response to Frei tests. The complement fixation test appears to be an unreliable diagnostic aid.

The frequency of positive reactions associated with other venereal diseases, and their infrequency otherwise, suggests that lymphogranuloma venereum may exist, unrecognized, in many persons, who may be, potentially at least, carriers of the disease.

LYMPHOGRANULOMA venereum is a relatively widespread disease which is frequently unrecognized by private physicians and public health workers. Either symptoms are not suspected or they are not readily demonstrable so that only a Frei test or a complement fixation test reveals infection. (See Table 4.)

The initial lesion is a small herpetiform vesicle or ulcer with clean edges and a whitish gray base, circular or lenticular in shape, sometimes multiple, usually inconspicuous, frequently transitory, and commonly unobserved by the patient. It generally occurs on the genitalia of either sex, usually is painless, heals spontaneously, and leaves no scarring. This primary lesion is not accompanied by subjective symptoms, and generally disappears within two weeks. Thus it is usually not demonstrated.^{10, 16} It may or may not be followed by enlargement of the regional lymph nodes.²⁴ Chronic enlargement of the nodes may not be evident in the female due to the drainage of the posterior two-

thirds of the genitalia to the perirectal lymph nodes; this drainage is responsible for the frequent occurrence of rectal stricture in the female.²⁰

If inguinal lymphadenopathy occurs, the earliest symptoms may be stiffness or aching in the groin during walking; later, nodes may become palpable and visibly enlarged. Following discrete enlargement of the inguinal lymph nodes, which are at first movable under the skin, the nodes become adherent, forming a single, inflamed mass.²⁵ This may be confused with tuberculosis involvement, Hodgkin's disease, lymphatic leukemia, bacterial infection, tularemia, or even with a hernia. If the disease is not adequately and promptly treated, the lymph nodes in the majority of cases will suppurate. There are many foci of suppuration. If this suppuration takes place in the perianal or deep pelvic lymphatic nodes of the female, it can result in pelvic inflammatory infection resembling that due to gonococci, possibly later requiring surgical intervention because of contraction of scar tissue. Elephantiasis in the genital area may follow local lymphatic obstruction due to an inflammatory exudate, or to cicatricial contraction occurring either in local areas or in the regional lymph nodes, or in both.¹⁵ Fortunately, sulfonamides are effective in the treatment of both these conditions.

The most serious established complication of lymphogranuloma venereum is the involvement of the anorectal region. It has been shown that most males having anorectal complications have been directly infected with the causal agent in the anal or rectal mucosa through the practice of sodomy.^{8, 11} However, adults and children of either sex may acquire this type of infection from a contaminated enema tip.¹⁰ The mucosa of the lower portion of the bowel apparently provides an excellent medium for the growth of the virus.¹⁷

In the female, as previously indicated, it appears that, except for sodomy, rectal involvement usually is the result of a direct extension of the virus by way of the lymphatic vessels from the genitalia to the rectum.

Rectal forms of the disease have been classified as stricture with proctitis, stricture without proctitis, and proctitis without stricture.¹⁰ The earliest clinical symptom of proctitis is a small amount of rectal bleeding accompanied by a small amount of pus.²⁰ Patients usually do not complain of discomfort until the stricture has developed. At this stage the granulation tissue is replaced by fibrous tissue. The restriction of the fecal passage results in abdominal cramps.

Infection, such as accidental infection in laboratory workers,¹² may occur on external sites. Meningeal²² and ocular infections³ have been reported, but these are rare.

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Although worldwide in distribution, the disease apparently was not recognized in this country until after 1920.²¹

The disease was first described by Hunter in 1786 in his description of "buboes which arose without visible cause and were unaffected by mercury."¹⁴ William Wallace in 1833²⁶ and others also gave early descriptions. Durand, Nicholas, and Favre⁵ fully described and interpreted the disease in 1913, naming it "subacute inguinal granulomatosis." Frei in 1925⁷ described the intradermal test which bears his name.

Hellerström and Wassen¹³ in 1930 found the causal agent of the disease to be a virus. Levaditi further established the role of the virus in 1932.¹⁸

McKee, Rake and Shaffer described a complement fixation test for the disease in 1940.¹⁹ With these aids, a relatively high incidence of the disease has been demonstrated.^{2, 16}

The virus has been isolated from apparently healthy vaginal, uterine, and urethral tissue of prostitutes with a known high rate of exposure to venereal disease. The virus has been recovered in man 21 years after infection.²⁰

It is incumbent upon physicians to be continuously conscious of the early clinical symptoms of the disease, for early diagnosis is essential if serious pathologic consequences are to be avoided.

OBSERVATIONS IN THE SAN FRANCISCO AREA

In San Francisco, between April, 1943, and December, 1947, Frei tests and complement fixation tests for lymphogranuloma venereum were done routinely on all patients examined at the Women's Jail Clinic and on all patients who had general symptoms referable to venereal diseases at the San Francisco City Clinic.

This procedure has led to the discovery of a notably greater number of infections in San Francisco than has been reported in other metropolitan seaports of the western United States. The ratios of the different venereal diseases to one another should be fairly constant in each of these cities. However, Table 1 shows this not to be true so far as reported cases are concerned. For the eight-year period, 1940-1947, the ratio of gonorrhea to syphilis was fairly constant for all cities. The ratios of syphilis to lymphogranuloma venereum and of gonorrhea to lymphogranuloma venereum, however, varied conspicuously from city to city. That the ratio for San Francisco was significantly lower than that for any other city implies that more cases of lymphogranuloma venereum in proportion to cases of syphilis and gonorrhea were reported in San Francisco than in other metropolitan seaports on the Pacific Coast.

TABLE 1.—Ratio of Syphilis to Lymphogranuloma Venereum, Ratio of Gonorrhea to Lymphogranuloma Venereum, and Ratio of Gonorrhea to Syphilis, of Cases Reported by Civilian Agencies, Pacific Coast Port Cities, 1940-1947

RATIO OF SYPHILIS (ALL STAGES) TO LYMPHOGRANULOMA VENEREUM							
Year	Los Angeles	Oakland	San Diego	San Francisco	California	Portland	Seattle
1940.....	227:1	283:1	253:1	94:1	303:1	*	139:1
1941.....	179:1	50:1	262:1	39:1	159:1	*	69:1
1942.....	175:1	76:1	92:1	23:1	114:1	*	249:1
1943.....	246:1	89:1	378:1	31:1	100:1	386:1	*
1944.....	122:1	194:1	*	29:1	82:1	959:1	353:1
1945.....	82:1	341:1	1188:1	33:1	109:1	*	177:1
1946.....	134:1	166:1	1273:1	22:1	101:1	311:1	132:1
1947.....	110:1	172:1	734:1	27:1	102:1	*	166:1
8-year total	139:1	135:1	364:1	30:1	120:1	1583:1	172:1
RATIO OF GONORRHEA TO LYMPHOGRANULOMA VENEREUM							
1940.....	174:1	248:1	517:1	100:1	273:1	*	178:1
1941.....	127:1	41:1	327:1	30:1	134:1	*	87:1
1942.....	99:1	55:1	71:1	16:1	90:1	*	229:1
1943.....	104:1	52:1	234:1	22:1	91:1	394:1	*
1944.....	72:1	149:1	*	28:1	118:1	1541:1	466:1
1945.....	70:1	361:1	1154:1	47:1	112:1	*	296:1
1946.....	166:1	276:1	930:1	39:1	140:1	782:1	319:1
1947.....	155:1	340:1	1191:1	44:1	152:1	*	442:1
8-year total	111:1	148:1	377:1	35:1	120:1	1991:1	253:1
RATIO OF GONORRHEA TO SYPHILIS							
1940.....	0.8:1	0.9:1	2.0:1	1.1:1	0.9:1	0.9:1	1.3:1
1941.....	0.7:1	0.8:1	1.2:1	0.8:1	0.8:1	0.7:1	1.3:1
1942.....	0.6:1	0.7:1	0.8:1	0.7:1	0.8:1	0.7:1	0.9:1
1943.....	0.4:1	0.6:1	0.6:1	0.7:1	0.9:1	1.0:1	1.2:1
1944.....	0.6:1	0.8:1	1.1:1	1.0:1	0.8:1	1.6:1	1.3:1
1945.....	0.8:1	1.1:1	1.0:1	1.4:1	1.0:1	2.3:1	1.7:1
1946.....	1.3:1	1.7:1	0.7:1	1.7:1	1.4:1	2.5:1	2.4:1
1947.....	1.4:1	2.0:1	1.6:1	1.6:1	1.5:1	1.7:1	2.7:1
8-year total	0.8:1	1.1:1	1.0:1	1.1:1	1.0:1	1.3:1	1.5:1

* No cases of lymphogranuloma venereum reported.

Table 2 shows the number of cases of syphilis, gonorrhea, and lymphogranuloma venereum reported by California ports as compared with total state morbidity reports for these diseases. San Francisco reported 11 per cent of the syphilis and 13 per cent of the gonorrhea cases in the state during the 1940-1947 period and 44 per cent of the lymphogranuloma venereum cases. This percentage of lymphogranuloma venereum is three and a half to four times the expectancy, which would also be approximately 12 per cent. The disproportionate figures for lymphogranuloma venereum must be due to differences in methods of search. In the San Francisco Department of Public Health the diagnosis of lymphogranuloma venereum is based on a strongly positive Frei test. It is believed that many asymptomatic cases, and possibly carriers, are discovered through this routine testing. Only occasionally were clinical symptoms of the disease discovered on careful examination of patients whose intradermal tests were positive. So far as is known, in most other cities on the Pacific Coast diagnosis is based entirely upon clinical evidence.

The authors believe that the practice of diagnosing lymphogranuloma venereum on clinical symptoms alone is no more justifiable than basing a diagnosis of all cases of syphilis entirely upon the clinical manifestations of early and late syphilis. Just as a latent

period is recognized in syphilis, so also, latency should be recognized in lymphogranuloma venereum, a latency likely to be followed by late clinical disease such as rectal stricture. The existence of hidden foci of infection during the period of latency has been postulated by Blair.¹

The authors believe that patients who have a positive reaction to a Frei test or who have significant titres by the complement fixation test may be carriers of the disease. Thus it is important from a public health point of view to locate them and to effect a cure of the carrier state. This puts a heavy responsibility on both the meaning and reliability of each of these diagnostic aids. An evaluation of these tests calls for demonstration of the degree to which they are consistent or reliable. It calls also for evidence that the tests really measure infection specifically and accurately.

Evidence to be presented suggests that the Frei test is probably at least as specific a test for lymphogranuloma venereum as the serologic test for syphilis is for that disease. Neither test is entirely specific.

Evaluation of the specificity of the Frei test is based upon experience during 1943 and 1944, when 325 Frei tests were done on groups of persons with a low expected venereal disease exposure rate. Persons in the following groups were tested: bacteriology stu-

TABLE 2.—*Venereal Disease Cases Reported by Civilian Agencies from Selected Port Cities in California as Compared to State Reports, 1940-1947*

Year	SYPHILIS—ALL STAGES									
	Los Angeles		Oakland		San Diego		San Francisco		California	
	No.	% of State	No.	% of State	No.	% of State	No.	% of State		
1940	6,813	31.3	849	3.9	506	2.3	2,450	11.2	21,785	
1941	6,970	31.1	743	3.3	786	3.5	2,213	9.9	22,405	
1942	6,820	27.5	994	4.0	917	3.7	2,758	11.1	24,805	
1943	11,083	33.6	1,691	5.1	1,135	3.4	3,127	9.5	32,994	
1944	10,884	40.4	1,939	7.2	1,106	4.1	2,868	10.6	26,961	
1945	9,609	35.8	2,044	7.6	1,188	4.4	3,351	12.5	26,833	
1946	8,553	35.3	1,657	6.8	1,273	5.3	3,092	12.8	24,221	
1947	7,690	35.3	1,548	7.1	734	3.4	2,709	12.4	21,766	
Total	68,422	33.9	11,465	5.7	7,645	3.8	22,568	11.2	201,770	
GONORRHEA										
1940	5,223	26.6	743	3.8	1,033	5.3	2,592	13.2	19,639	
1941	4,967	26.3	613	3.2	981	5.2	1,700	9.0	18,871	
1942	3,878	19.7	717	3.6	712	3.6	1,933	9.8	19,682	
1943	4,667	15.6	994	3.3	703	2.4	2,251	7.5	29,912	
1944	6,397	31.4	1,491	7.3	1,223	6.0	2,748	13.5	20,365	
1945	8,134	29.4	2,167	7.8	1,154	4.2	4,750	17.2	27,668	
1946	10,632	31.9	2,764	8.3	930	2.8	5,377	16.1	33,364	
1947	10,859	33.6	3,056	9.4	1,191	3.7	4,363	13.5	32,396	
Total	54,757	27.1	12,545	6.2	7,927	3.9	25,614	12.7	201,897	
LYMPHOGRANULOMA VENEREUM—ALL STAGES										
1940	30	41.7	3	4.2	2	2.8	26	36.1	72	
1941	39	27.7	15	10.6	3	2.1	57	40.4	141	
1942	39	17.9	13	6.0	10	4.6	120	55.0	218	
1943	45	13.6	19	5.8	3	1.0	101	30.6	330	
1944	89	39.0	10	4.4	0	0	98	43.0	228	
1945	117	47.6	6	2.4	1	0.4	101	41.1	246	
1946	64	26.8	10	4.2	1	0.4	138	57.7	239	
1947	70	32.9	9	4.2	1	0.5	99	46.5	213	
Total	493	29.2	85	5.0	21	1.2	740	43.9	1,687	

dents at the University of California, Berkeley campus; bacteriology students at the San Francisco State College; student nurses at the San Francisco Mary's Help Hospital; and the professional staff of the division of venereal diseases of the City and County of San Francisco Department of Public Health. Only in one instance (0.3 per cent) was there positive reaction to a Frei test. Gelperin,⁹ testing healthy U. S. Army personnel, found a much higher incidence of positive reactions to Frei tests in Negro troops than in white troops, the ratio being 16:1. The authors' findings and those of Gelperin indicate a low incidence of positive reactions in groups with a low expected venereal disease exposure rate, in contrast to a relatively high incidence in groups with a high expected venereal disease rate.

The work of Dulaney and Packer⁴ indicates that the complement fixation test is not as specific as the Frei test. Testing 148 medical students with no clinical evidence of venereal disease, they found 13 students with positive reaction to complement fixation tests (8.8 per cent) at dilutions of 1:5, 1:10, or 1:20. This contrasts with the authors' findings of 0.3 per cent positive reactions to Frei tests in a similar group.

An important consideration is the relative efficiency of the Frei test as compared with the complement fixation test. The cost of performing the Frei test is regarded by some as several times that of the complement fixation test. Furthermore, the Frei test demands the return of the patient within 48 to 72 hours after the injection. Since many patients do not return within this period, an appreciable number of Frei tests are wasted. On the other hand, reports are made on virtually all specimens submitted for complement fixation test.

In these circumstances it is essential to know how the complement fixation test compares with the Frei test in detecting clinically unrecognizable cases. Statistical reliability of the Frei test was demonstrated by a survey of 325 persons with a low expected rate of exposure to venereal disease.

Table 3 shows the number of Frei tests and complement fixation tests performed on selected patients at the San Francisco City Clinic and the Women's Jail Clinic. The data on positive reactions to Frei tests and positive reactions to complement fixation tests do not agree well. Of 9,188 patients on whom both tests were performed, 1,407 (15 per cent) had a positive

reaction to intradermal tests, or to complement fixation tests or to both. Of these, only 89 patients (6 per cent) with positive reaction to one of the tests had positive reaction to both tests. In 931 patients (67 per cent), the Frei test was negative while the complement fixation test was positive. In 201 patients (14 per cent), the Frei test was positive while the complement fixation test was negative. The remaining 186 patients (13 per cent) had a positive Frei test with a weakly positive, doubtful, nonspecific, or anti-complementary complement fixation test, or a doubtful Frei test with a positive complement fixation test. Of 430 patients with a positive Frei test only 89 (21 per cent) had a positive complement fixation test.

Table 4 presents an analysis of those patients at the City Clinic and the Women's Jail Clinic with positive reactions to one or both tests who also gave a history of having had symptoms that might be attributable to lymphogranuloma venereum or had present symptoms. Of 1,407 patients with positive tests, 180 (13 per cent) revealed or had indicated such symptoms. More than half of these patients had a negative reaction to the Frei test and a positive response to the complement fixation test. This may indicate that the symptoms did not constitute a reliable index of infection, or that the Frei test and complement fixation test do not cover the same stages of infection. Perhaps, for instance, the Frei test misses the early stages.

Table 5 shows that 306 patients were diagnosed with or without clinical symptoms as having lymphogranuloma venereum at the City Clinic during the period of the survey. Only 120 (39 per cent) were found to have lymphogranuloma venereum alone. The remaining 186 (61 per cent) of those diagnosed as having lymphogranuloma venereum also had one or more of the other venereal diseases. In the group of patients with positive reaction to a complement fixation test and negative response to a Frei test, only 17 (4 per cent) were clinically diagnosed as having lymphogranuloma venereum.

Table 6 shows that out of 784 patients at the City Clinic who had positive reaction to either or both tests, 683 (87 per cent) either had a history of some previous venereal disease or were currently diseased. Only 101 (13 per cent) had neither history of previous venereal infection nor venereal disease at the time of examination.

TABLE 3.—Comparison of Results of Frei Test and Complement Fixation Test for Lymphogranuloma Venereum on 9,188 Patients of San Francisco City Clinic and Women's Jail Clinic, 1943-1947

Frei Test Result	Complement Fixation Test Result												Total	
	Positive		Weakly Positive		Doubtful		Negative		Non-Specific		Anti-Comp.			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	
Positive	89	1.0	80	0.9	48	0.5	201	2.2	8	0.1	4	—	430	4.7
Doubtful	46	0.5	46	0.5	38	0.4	140	1.5	1	—	2	—	273	3.0
Negative	931	10.1	1,168	12.7	924	10.1	5,291	57.7	124	1.3	47	0.5	8,485	92.3
Total	1,066	11.6	1,294	14.1	1,010	11.0	5,632	61.3	133	1.4	53	0.6	9,188	100.0

In the above table, fractions less than one-tenth of 1 per cent are not shown, although they were taken into account in totalling the columns.

TABLE 4.—*Symptoms Attributable to Lymphogranuloma Venereum Found in Patients with Positive Frei and/or Complement Fixation Test, San Francisco City Clinic and Women's Jail Clinic, 1943-1947*

Test Result		Number of Complement Symptoms Per Patient	Symptoms						Urethral Discharge Not Attributable to Gonorrhea	Inguinal Region Shotty	Total Cases with Symptoms	No Symptoms
Frei	Fixation		Pelvic Pain	Inguinal Lymphadenopathy	Rectal Stricture	Elephantiasis of Genitalia						
Pos.	Pos.	1	1	9	2	...	...	...	...	...	12	75
		2	2	2	...	...	...	...	...	...	2	
Pos.	Wk. Pos.	1	3	8	1	...	...	1	...	...	13	66
		3	1	1	...	...	...	1	...	...	1	
Pos.	Dbt.	1	4	3	...	...	...	1	...	...	8	39
		2	1	1	...	...	...	1	...	...	1	
Pos.	Neg.	1	4	22	1	...	...	3	2	32	167	
		2	1	2	1	...	...	3	...	...	2	
Dbt.	Pos.	1	3	3	...	...	...	...	...	...	6	39
		2	1	1	...	...	...	...	...	...	1	
Neg.	Pos.	1	31	50	1	3	1	1	3	2	89	833
		2	5	6	1	1	1	1	1	...	7	
		3	2	1	2	1	1	1	1	...	2	
Pos.	Non-Spec.	1	2	...	1	...	...	...	...	...	3	5
Pos.	Anti-Comp.	1	...	...	1	...	...	...	...	...	1	3
Totals:		1	48	95	7	3	6	5	5	164	1,227	
		2	10	12	2	1	1	1	1	13		
		3	3	2	2	1	1	1	1	3		
			61	109	11	5	8	5	5	180		
Per cent of Symptomatic Cases		34	61	61	6	3	4	3	3			
Total Cases..... 1,407												
Total Symptomatic Cases..... 180						Total Asymptomatic Cases..... 1,227						
Per cent Symptomatic Cases..... 13						Per cent Asymptomatic Cases..... 87						

TABLE 5.—*Diagnosis Following Examination of Patients with Positive Frei and/or Complement Fixation Test, San Francisco City Clinic, 1943-1947*

DIAGNOSIS														Syphilis		Gonorrhea		Chancreoid		Syphilis and Gonorrhea		Ge. Prior Treatment for LGV		No Venereal Disease (VD), Prior Treatment for LGV		No VD, Prior Treatment for VD, Other than LGV		No Diagnosis, Prior Treatment for VD Other than LGV		No Diagnosis		No VD, No Prior History of VD		Total
Test Result		Lymphogranuloma Venereum (LGV)		LGV and Syphilis		LGV and Gonorrhea		LGV and Chancreoid		LGV, Syphilis and Chancreoid		LGV, Gonorrhea and Chancreoid		Syphilis		Gonorrhea		Chancreoid		Syphilis and Gonorrhea		Ge. Prior Treatment for LGV		No Venereal Disease (VD), Prior Treatment for LGV		No VD, Prior Treatment for VD, Other than LGV		No Diagnosis, Prior Treatment for VD Other than LGV		No Diagnosis		No VD, No Prior History of VD		Total
Frei	Comp. Fix.																																	
Positive	Positive	16	5	30	3	..	..	..	1	10	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	66
Positive	Wk. Pos.	25	2	23	2	3	1	..	..	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	69
Positive	Doubtful	15	1	16	..	2	..	1	..	5	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42
Positive	Negative	44	4	73	6	5	1	..	2	17	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	169	
Doubtful	Positive	2	..	3	..	..	..	..	1	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	19
Negative	Positive	14	..	3	..	..	..	..	..	17	221	6	11	1	4	40	6	7	87	412										
Positive	Non-Specific	3	..	2	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	
Positive	Anti-Comp.	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	
Total		120	12	150	11	10	2	1	21	272	9	14	1	4	44	11	11	91	784															
Total Lymphogranuloma Venereum.....														306																				

COMMENT

The reaction to complement fixation test was positive in a much greater number of cases than was reaction to the Frei test. Thus it might appear to be a satisfactory exclusion test. If the complement fixation test is to be judged a satisfactory exclusion test, it ought to give a positive reading whenever the Frei test reaction is positive. As previously indicated, it was found that in 14 per cent of the patients having positive reaction to one or both tests, the Frei test reaction was positive while reaction to the complement fixation test was negative, and in 67 per cent the order was reversed. It appears, therefore, that neither the complement fixation test nor the Frei test is a satisfactory exclusion test. The authors believe the Frei test to be more specific than the complement fixation test and thus a better diagnostic aid.

For the Frei test the authors use an antigen (Lymphogranum ®) prepared from yolk sacs harvested from chicken embryos moribund or recently dead from infection with the virus of lymphogranuloma venereum and purified by selective centrifugation. In patients having a reaction, an area of induration develops in from 24 to 72 hours.

In principle, the reaction of the Frei test is presumed to be due to the development of hypersensitivity from prolonged exposure to the virus, a sensitizing process which occurs in many infections of sufficient chronicity. More precisely, the reaction is a delayed inflammation resulting from the injection of a substance which, in the skin of unsensitized persons, is innocuous. The test is not to be classed arbitrarily with serologic (antigen-antibody) reactions, from which it probably varies in major respects. Sensitivity develops more slowly with the Frei test than do antibodies which permit fixation of complement; in most cases sensitivity lasts longer. The sensitized state may be subject to less fluctuation than the titre of complement fixing antibodies. It must be noted, however, that response is not the same in all persons. Some infected persons unquestionably are sensitized more readily than others, and some may never be sensitized. By the same token, the formation of antibodies in response to antigenic stimuli is notoriously variable in different persons and may be inconstant in any one person.

In considering the reliability of the complement fixation test, attention should be directed to the delicacy of the reaction. The technique is similar to that of the Kolmer complement fixation test, the main difference being that the total volume of fluid used is very much smaller, being 1.1 ml. Thus, the volume of each of the five constituent parts is extremely small. As a result of this, the titrating of the hemolytic agent must be done with great care, and any small amount of inaccuracy in calibration leads to a high percentage of error in the final result. Control checks against normal egg extracts must at all times be set up with each serum to rule out any non-specific reactions. It is thus a delicate test and liable to error unless conducted under the most exacting conditions. This possibility of error appears to diminish its over-all validity.

Opinions differ regarding the specificity of the two tests, except that there is general agreement that neither is strictly specific. Only a practical or statistical specificity can be claimed. Cross reactions in persons with present or past infections due to viruses with similar sensitizing or antigenic components are possible. Patients with "atypical" pneumonia, trachoma, psittacosis and related virus infections may also react to one or both of these tests. Accumulating epidemiological data concerning all members of the group of diseases suggest that, despite an acknowledged lack of specificity (a lack which deserves full recognition in the interpretation of the results of tests) the number of present or past cases of infection other than lymphogranuloma venereum is not great enough seriously to interfere with the value of the tests in groups of persons having a high venereal disease exposure rate.

A source of potential error may lie in the assumption that reacting patients have current cases for which treatment is indicated. There is no means at present for learning precisely what percentage of reactors have cured or arrested cases. The authors justify the procedure of diagnosing lymphogranuloma venereum on the basis of reaction to a Frei test in the absence of clinical symptoms, perhaps too broadly, on the assumption that most reactors at the present time, at least, have been treated inadvertently, if at all, and that the chronicity of the disease and potential late and serious sequelae justify

TABLE 6.—Venereal Disease History of Patients with Positive Frei and/or Complement Fixation Test, San Francisco City Clinic, 1943-1947

Test Result	Prior History of VD, * No VD at Time of Exam.	Prior History of VD & VD at Time of Examination	VD at Time of Exam.—No Prior History of VD	Prior Hist. of VD—No Diag. at Time of Exam.	No VD at Time of Exam.—No Prior History of VD	No Diag.—No Prior History of VD	Total	
Positive Frei	Positive	...	40	26	...	...	66
Positive	Wk. Pos.	1	40	28	...	...	69
Positive	Doubtful	...	22	19	1	...	42	
Positive	Negative	5	97	60	5	...	169	
Doubtful	Positive	2	4	8	...	4	19	
Negative	Positive	40	102	170	6	87	7	412
Positive	Non-Specific	...	2	4	6
Positive	Anti-Comp.	1	1
Total	48	307	316	12	91	10	784	

* Venereal disease.

the label of "present infection." As the causal virus has been isolated in asymptomatic cases and as the development of rectal stricture may apparently occur long after the initial infection, the conclusion that there may exist a prolonged period of latency with potential communicability and sequelae (in untreated cases) seems tenable at present.

Blair¹ reported that, out of 744 complement fixation tests performed routinely on specimens submitted for serologic tests for syphilis, 95 (12.8 per cent) were positive (4 plus at a dilution of 1:5 or higher). Frei tests were also performed on 41 of these 95 patients with a positive complement fixation test, and only 15 (36.6 per cent) were found to be positive. The authors' experience with negative Frei tests in the presence of positive complement fixation tests agrees with that of Blair.

Wright, Spencer, and Oppenheim²⁷ reported that in 1939 they performed routine Frei test on 1,073 adult patients admitted to the medical and surgical services of the New York Harlem Hospital because of diseases other than lymphogranuloma venereum. The patients had no symptoms of the disease. Of the group, 250 patients (23.3 per cent) had positive reaction to Frei tests—19 (12.2 per cent) of the white patients and 231 (25.2 per cent) of the Negro patients. However, among 130 children routinely given the Frei test, there were no positive reactions and only one doubtful. These findings show close correlation with the expected incidence of other venereal diseases in such groups; namely a low incidence of positive reaction to the Frei test in a group with a low expected venereal disease exposure rate. These observations regarding the specificity of the Frei test are similar to those of the authors. In a subsequent series of 209 patients admitted to the adult surgical wards of the Harlem Hospital, both Frei and complement fixation tests were performed. In this series, there was a close relationship between the results of the two tests. This observation disagrees with the observations of the authors and of others, perhaps because the series was small.

The high incidence of positive reaction to Frei tests and to complement fixation tests among patients with venereal disease is confirmed by other reports.^{1,4,6,23} Some observers^{1,23} believe that the high incidence of positive reaction to complement fixation tests is due to concurrent or previous lymphogranuloma venereum infection without clinical symptoms.

The low incidence of positive reaction to complement fixation tests in persons with a low rate of exposure to venereal disease is reported by others.^{1,4,6,23} The low incidence is especially striking in children.^{1,23}

CONCLUSIONS

Observations on 9,188 patients examined with the Frei test and complement fixation test for lymphogranuloma venereum suggest that the Frei test may be quite specific, whereas the complement fixation test is less so. Because it is less specific, the complement fixation test should not be used as an exclusion test.

The number of patients who, despite negative reaction to Frei test, had a positive complement fixation test and also had past or present symptoms referable to the disease, indicates that the diagnostic reliability of the complement fixation test is very low and that the test, therefore, is not an important diagnostic aid. It should, along with the Frei test, be available to all agencies who care for patients with venereal disease or who provide medical care for persons with a high rate of exposure to venereal disease.

It is quite possible that these tests are, in usage, parallel to the serologic diagnosis of syphilis. Multiple tests aid in arriving at satisfactory diagnostic conclusions. Reasonable conclusions depend upon readiness to suspect all venereal disease infections, upon clinical evidence, and upon these tests.

Lymphogranuloma venereum has been neglected by physicians both in private practice and in public health work. It warrants full respect. Its disabling effects, especially in the female, are considerable. As in syphilis, they can only be avoided by early diagnosis and active treatment. After scar tissue formation and contraction have taken place, medical therapy is of no value; the patient, if pathologic change is extensive and the symptoms are severe, may be relieved only by operation.

The possibility of a carrier state, especially in the female, exists. It has been observed that female sex contacts of persons known to be infected are often clinically asymptomatic but show a positive response to the diagnostic tests.

Diagnosis of the disease is essential, for the diminished use of sulfonamides in the control of venereal disease increases the possibility of a carrier state of those undiagnosed. For instance, penicillin, which has largely replaced the sulfonamides in the treatment of gonorrhea, has no therapeutic effect on lymphogranuloma venereum. Thus the disease may be untreated if undiagnosed.

It is recommended that all male and female patients who have symptoms indicative of disease of the inguinal lymph nodes or who are examined for genital clinical symptoms referable to a venereal disease should have a Frei test for lymphogranuloma venereum. All female patients admitted to a venereal disease clinic also should be given a Frei test.

Statistics suggest that this disease has been too infrequently suspected. Adequate examination for the disease is within reach of all venereal disease clinics.

*Discussion by A. FRANK BREWER, M. D.**

Dr. Koch has again indicated for us that the prevalence of this disease is greater than many people suspect, particularly in groups of individuals who are venereally infected. It is evident from his work that not only private physicians, but public health clinics, do not recognize many of these cases and that complications of the disease are probably much more frequent than many have thought.

His postulation that there is a true latent stage similar to latency in syphilis is open to question. It is, however, prob-

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able that the disease is carried in the same manner as the virus of herpes simplex is carried, and that there is a trigger mechanism to reactivate it in certain instances, so that his postulation that all patients having a positive Frei test reaction should be reported and treated is a logical step in the control of the disease.

He mentioned the use of sulfonamides, but does not, however, mention some of the other antibiotics which seemingly are proving more specific than the sulfonamides. The question must be raised here that if persons with positive reactions to Frei tests are to be treated with the best-known antibiotics, would we not again be sensitizing a good many individuals for whom there is no definite proof that treatment would be of real benefit?

Basically, the conception that all venereal disease patients in public clinics and in the hands of private physicians should have Frei tests, I believe is sound; and the proposal that cases of lymphogranuloma venereum be reported is probably as sound as the reporting of latent syphilis. I doubt that the use of the complement fixation test, as well as the Frei test, in these cases is indicated as practical at this time, before some intensive education is carried on with the laboratories. Certain key laboratories might at this time be utilized. The complement fixation is technically difficult to perform properly and its specificity is questionable; and certainly true is Dr. Koch's statement that further evidence is needed to really measure the specificity and accuracy of the tests.

The large series of cases in the adult venereal disease group as compared to the low incidence in children certainly indicates that there is such specificity, especially in the Frei test. Dr. Koch has verified previously performed work in a number of instances and has added to our knowledge of the disease. His study certainly points up the fact that our index of suspicion should be much higher in regard to this disease than it generally is.

As was pointed out, there are questions in regard to the immunology of the disease yet to be clarified. The question of cross-reactions due to other viruses with similar sensitizations or antigenic components is certainly a valid one, and it may be that we are incorrectly diagnosing cases by use of the Frei test. I doubt that we can accept the statement that the number of present or past cases of infection with these other viruses is not great enough to seriously interfere with the value of the test in groups of persons in whom the exposure rate is high, since we are dealing generally with the group of persons who here are more likely to infection of all types and kinds, and whose general health is not as good as that of persons in other groups.

I agree heartily with Dr. Koch's conception that lymphogranuloma venereum warrants full respect, and agree generally that there is probably a carrier state and also that the Frei tests should be routinely used in venereal disease clinics. There is some question in my mind as to whether routine therapy should be given. Accepting reports of lymphogranuloma venereum on the basis of the Frei test, I believe, is at this time sound because it would give us a better knowledge of the distribution of the disease. More studies are needed on the carrier state, and on the virus from carriers.

Discussion by PAUL FASAL, M. D., San Francisco

I feel that Dr. Koch has made a valuable contribution to public health by calling attention to a neglected aspect of our knowledge of lymphogranuloma venereum, namely a clinically asymptomatic stage. I fully agree with Dr. Koch that we all miss cases of lymphogranuloma venereum by diagnosing it by clinical features only.

Unfortunately, neither the Frei test nor the complement fixation test enables us to distinguish whether the process is

still active or whether the patient had the disease in the past and is no longer contagious. From a public health point of view, it is the smaller evil to treat all patients having positive positive reactions in order to cover all potential carriers of this infection, provided we have drugs which are not only specific but at the same time non-toxic. So far, sulfa drugs have been used with some success, but it seems that this success is due to their action on secondary invaders and not on the virus itself. Reports on the action of aureomycin are encouraging, but it seems to be rather toxic. If chloramphenicol proves to be what it seems to promise, we might at last have an effective and non-toxic weapon against lymphogranuloma venereum.

If we compare for a moment the Frei test with the serological tests for syphilis, I think we must call the Frei test a specific test, as it is performed with a specific antigen and gives group reactions only with closely related viruses, like psittacosis and trachoma. On the other hand, we do not use a specific antigen in serological tests for syphilis, and know only too well how many false positive reactions we get besides the positive reactions in the so-called syphiloid diseases.

Comparing the value of the Frei test with the value of the complement fixation test in lymphogranuloma venereum in Dr. Koch's tables, it seems obvious that the complement fixation test in its present form is of no practical value. In Table 5, for instance, we see in a group of 91 patients without any history or evidence of venereal disease, that 87 or 96 per cent had positive reaction to complement fixation tests, while all had negative reaction to Frei tests. As Dr. Koch told us that lymphogranuloma venereum is usually associated with other venereal diseases, we have reason to believe that the Frei test is correct and that these patients with positive reaction to complement fixation tests did not have lymphogranuloma venereum.

I fully agree with Dr. Koch that Frei tests should be performed on all patients with venereal disease and that the complement fixation test in its present form should not be used as it gives a very high percentage of false positive reactions.

To gain more information about the activity of the disease, determination of serum globulin and the albumin-globulin ratio could be used in Frei positive cases. Combes, Canizares and Landy suggest that the formol-gel test might help to differentiate active from inactive cases, as apparently hypoglobulinemia parallels the activity of the disease.

Lymphogranuloma venereum exists all over the world. I know from personal observations that it is a most important and frequent disease in the Far East and in Mexico. It can present great problems of differentiation in clinical diagnosis. In addition to syphilis, chancroid and granuloma inguinale, one has to think of tuberculosis, the lymphoblastoma, tularemia, and even mild plague, with which it has been confused often in former days. In Hong Kong, it was even called pestis minor.

Dr. Koch is to be congratulated to have brought this important subject to our attention, which is of special interest to physicians in California, where due to our geographic position we might expect an increase of existing cases of lymphogranuloma venereum from travelers, ship crews, and migratory workers.

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Safer Gastrectomy

100 Consecutive Cases Without Mortality

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SUMMARY

Duodenal stump disruption accompanied by fatal peritonitis is the complication most to be feared following gastrectomy and anastomosis by any one of the Billroth II modifications.

While many explanations of this complication have been presented and many means devised to prevent it, by far the most frequent cause is distention of the proximal duodenum because of obstruction at the stoma due to kinks, angulations or post-operative edema.

A supplemental report is made on a disintegrating T-tube designed to facilitate gastroenteric anastomosis, insure patency of the stoma and make impossible obstruction of the proximal loop.

This report covers 100 consecutive instances in which the disintegrating tube was used and emphasizes the favorable postoperative course usually experienced by the patients.

cial stress upon the danger of this complication and presents his method for preventing pressure upon the stump by an infolding tamponade.

In 1945 one of the authors,¹ working with Mr. Grover C. Miller, chemist of the Seal-Ins Laboratories,² Los Angeles, designed a disintegrating tube to be placed in the gastroenteric stoma at the time of resection.

This tube is a further development of the principle used in the timed enteric coating for tablets and capsules developed by Mr. Miller several years ago. Its dependability has been proved by many investigators, including its use in intestinal anastomotic rings as reported by Richards and Thomas.⁴ The material used in making these tubes varies somewhat from the enteric coating, but the principle is the same. Percentages are changed to meet timing requirements. These tubes are composed of the following: stearic acid, U.S.P., carnauba wax No. 1, white purified beeswax, petroleum jelly, powdered elm bark, and an antiseptic, merthiolate 1 to 7,000. Also, barium sulfate is combined in the mixture to cast a shadow in case it should be desired to take a roentgenograph at any time during the period of the tube's disintegration within the patient. This material has a melting point of approximately 85° C. The purpose of the powdered elm bark is to absorb water and expand; the expanding gradually splits away the waxes and permits a further penetration of the moisture into the wall. The timing is controlled by the percentage of elm bark used. There is a small thin reinforcement strand of silk imbedded in the walls of the tube which materially strengthens it, and not only reduces the danger of breaking at the time of operation but makes it impossible for any part of the tube to separate from the stem before disintegration takes place. The tube may be sterilized by placing it in a zephiran chloride solution, 1 to 1,000, for 15 minutes at room temperature.

This disintegrating tube is easily understood by reference to the accompanying illustrations. It is inserted into the anastomosis when all but the anterior suturing is completed. It lies loosely in the stoma without anchoring, but is held in that position by its configuration. Its multiple fenestrations encourage free flow of duodenal and gastric contents into the distal jejunum and make it impossible for blocking to occur. Its presence at the time of the anastomosis acts as an excellent guide for suturing and prevents the formation of kinks and angulations. With this framework, it is almost impossible to

WHENEVER and wherever gastrectomy and anastomosis by any one of the Billroth II modifications is discussed there is always a note of warning about the danger of disruption of the duodenal stump as the complication most to be feared because it is the complication most likely to cause death. Much has been written both in explanation of this complication and as to means to prevent it. Attention has been directed to faulty suture technique as one of the causes of stump disruption. The use of too many layers has been blamed for failure to heal on the basis of interference with circulation. Cauterization of the stump has similarly been considered by some to be responsible. Then, too, the general condition of the patient, with particular reference to fluid and the electrolyte balance, serum proteins and vitamin status, has been weighed in connection with faulty healing.

The most common cause of stump disruption is a mechanical one and consists of increased intraluminal pressure consequent upon kinks, angulations or edema at the stoma, following which there is no satisfactory egress for the daily 1,500 cc. or more of bile, pancreatic and duodenal secretions, with resultant undue pressure upon the duodenal stump, which, however well it may have been sutured, ultimately gives way. McNealy³ lays spe-

¹The authors have no financial interest in any product of the Seal-Ins Laboratories.

make a faulty anastomosis. It does not in any manner cause pressure upon the suture line or adjoining tissue. It disintegrates in approximately 96 hours, thus affording patency to the stoma during the most critical postoperative period, and removing itself automatically when that function is no longer required. No complication or untoward circumstance has arisen attributable to the use of the tube.

Sufficient experience with this device has now accumulated over the past three and a half years to justify a further report. This experience lends itself well to summary in the following tables:

Number of cases in which Alesen tube was used:

100 cases.

Average diet:

Liquid diet second day.
Soft diet third to fourth day.

Average temperature postoperatively:

100° to 101° F. first day.
Less than 100° F. by third day.

Type of operation:

1. Anterior Polya	58
2. Hofmeister Polya, anterior	32
3. Posterior Polya	4
4. Balfour Hofmeister, anterior	3
5. Posterior gastroenterostomy	2
6. Vagotomy and posterior gastroenterostomy	1

Indications for operation:

Intractability	43
Obstruction	23
Hemorrhage	25
Carcinoma	5
Leiomyosarcoma	1
Gastric ulcer	2
Malfunctioning gastroenterostomy	1

Classification as to difficulty encountered at operation:

Difficult, 61 (large chronic ulcers with considerable deformity and adherence to surrounding structures).
Simple, 39.

Types of complications:

Atelectasis	2
Mechanical small bowel obstruction	1
Pulmonary embolus	1
Ileus	1
Bronchopneumonia	1
Wound infection	1
Thrombophlebitis	1
Wound dehiscence	1
Subphrenic abscess and pulmonary embolus	1

Following the usual gastrectomy in which the disintegrating tube has been employed, the patient leaves the operating table with a Levine tube in place. On the morning of the first postoperative day he is encouraged to drink water freely. The Levine tube is connected with constant suction, thus affording thorough irrigation of the stomach and removal of accumulated mucus. At noon on the first postoperative day, the Levine tube is removed and the patient is given water, tea, and broth, at first in small quantities, but in increasing amounts as he tolerates them.

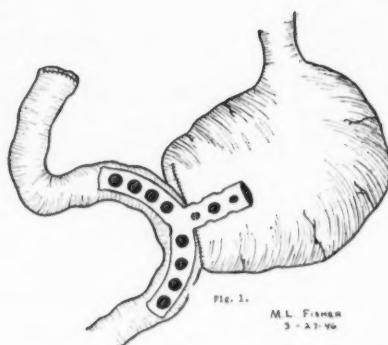


Fig. 1.
M. L. Fisher
3-27-46

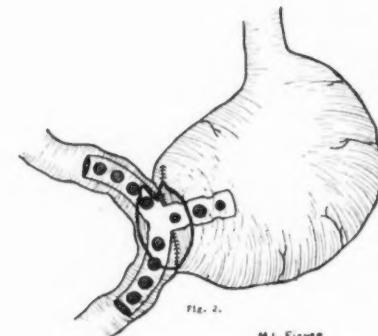


Fig. 2.
M. L. Fisher
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Figure 2.—Diagrammatic representation of the T-tube being placed loosely in the gastrojejunostomy stoma.

With the tube in place there can be no obstruction at the stoma and the only factor causing gastric distention and vomiting is the temporary paralysis of the bowel that usually is present for a certain length of time following gastrectomy or any other laparotomy. Just as soon as the bowel tone approaches normal and peristalsis is reestablished, the patient is able to take liquids freely. For this reason the double-barrelled feeding tubes are now almost never employed. These patients usually tolerate a soft diet on the third day and receive a light diet on the fifth. It has been necessary in approximately one-third of these cases to reinsert the Levine tube for a short time on the second postoperative day, for the reasons previously outlined.

The tube is not presented as a substitute for good surgical technique. Gentle handling of tissues and careful approximation are still as important as ever in obtaining good results. However, experience with the tube emphasizes certain very definite and valuable benefits which its use confers upon the patient:

1. Smoother postoperative convalescence. One of the most notable clinical observations is that the patients postoperatively are more comfortable from the very day of operation. It is refreshing to see them take nourishment early without discomfort, to

see their postoperative temperatures much lower on the average than formerly, and to be able to discharge them without untoward event, in many instances on the seventh postoperative day.

2. It will be seen by reference to the table that postoperative complications have been few, indeed, and these for the most part unrelated to the abdominal condition. Doubtless, early ambulation has played an important part in this favorable showing. The technically difficult resection of an indurated ulcer from the head of the pancreas is approached more optimistically with the knowledge that a troublesome closure will not be subjected to the hazard of increased intraluminal pressure during the first few postoperative days when so much depends upon the integrity of the suture line.

3. Types of operation have varied as will be apparent from the data, but in each instance the use of the disintegrating tube has added a factor of safety that has heretofore been lacking. Naturally, the surgeon will and should individualize in selecting the indication for the use of this device as for any other procedure, but it can readily be seen that it is particularly useful in those cases of carcinoma or gastric ulcer wherein a very high resection such as subtotal or almost complete gastrectomy is performed. These resections are notoriously hazardous from the standpoint of angulation and kinking at the stoma, and the use of the tube in cases of this type is particularly justified. The tube has been used

quite satisfactorily in a number of gastroenterostomies as well.

ADDENDUM

Since these data were compiled, two deaths following gastrectomy for complicated duodenal ulcer have occurred. In one case the patient was a 61-year-old male with complete dehiscence of the abdominal wall on the sixth postoperative day. Following repair, bronchopneumonia developed, accounting for death. The duodenal stump was intact.

The second patient was a 55-year-old male with severe diabetes. Disruption of the duodenal stump developed on the fifth postoperative day and the patient died in spite of drainage. Autopsy showed a perfectly functioning gastroenteric stoma and a sound suture line. The duodenal stump, however, had not healed satisfactorily. This is the only instance of duodenal disruption following the use of the tube that has come to the authors' attention, notwithstanding that the tube is being used extensively in Los Angeles and elsewhere throughout the country.

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Management of Cord and Placental Blood and Its Effect Upon the Newborn

PART I

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SUMMARY

A comparative study was made of erythrocyte counts and weights of the newborn at term. Three groups were used: Cases in which the cord was clamped at once, those in which the cord was allowed to pulsate five minutes, and those in which the cord and placental blood was stripped into the baby. Standards and procedure were set up so that there would be a minimum of error.

Evidence was elicited showing that babies in the "pulsating" and the "stripped" groups received a significant amount of blood which was beneficial. The amount varied, but when the stripping method was used, the term baby received about 100 cc. of blood.

Babies receiving this blood had higher erythrocyte counts, higher hemoglobin values, higher initial weights, less weight loss, and less rapid loss of weight.

It is believed the additional blood supplied is of benefit especially to prematures and to those infants who are in any degree of shock following long labors, difficult deliveries, abruptio placenta, placenta previa, or compression of the cord.

The added blood benefits the baby by combating the initial shock, by aiding in filling the capillary bed of the expanding lungs, by increasing iron reserve, by lessening demand upon blood-forming organs (especially in prematures), by protecting the breakdown of body proteins and by aiding the transition from one source of oxygen to another.

Five minutes, as a rule, is not long enough

to wait for pulsation if the baby is to receive its quota of available blood.

Stripping of cord and placental blood into the infant is not a harmful procedure when done gently and is particularly useful in cases where the condition of the mother or child is such that it is inadvisable to wait for the uterus to force the blood physiologically into the child.

The additional blood does not cause icterus.

The pulsating of the umbilical cord plays only a minor role in the process by which the baby receives blood after the second stage of labor. The pressure of the uterine contractions upon a blood-filled placenta, forcing blood through the umbilical vein into the child, plays the major role. Pitocin and/or ergot preparations would aid in this process.

Anemic mothers have a tendency toward having anemic babies.

Venous pressure experiments using a plethysmograph showed pressures before and after stripping, the force of uterine contractions on the umbilical vein pressure and the variation in pressure with crying and at rest. The giving of 100 cc. of blood by stripping affects the venous pressure of the child very little, if done slowly. If the stripping is done rapidly, there is a transient rise with a return to normal within a few minutes.

A survey of 1,900 diplomats of the American Board of Obstetrics and Gynecology showed that there is wide variation in the management of cord and placental blood. Of 455 specialists who stripped the cord, five thought there was some increase in icterus, and one reported cardiovascular distress.

THE patient in premature labor with a questionably viable baby is a familiar and all too-frequent problem. The usual precautions are taken: The fetal heart is carefully observed for signs of distress, analgesia is held to a minimum, Vitamin K is administered. When dilatation of the cervix is complete and the presenting part on the perineum, an an-

esthetic having minimal effect upon the baby is given, usually caudal or low spinal. An episiotomy is made and the premature child carefully delivered. The umbilical cord is then usually cut immediately, the air passages cleared, and the child rushed to the incubator. A pediatrician is summoned and all agree that if the child "has the spark" it will survive; if not, it will die. Why do some not have the "spark"? One reason which prompted the study here presented was to try to answer this question.

A statistical survey of the maternal and infant mortality at the Hospital of the Good Samaritan over a 20-year period showed a dramatic decline in

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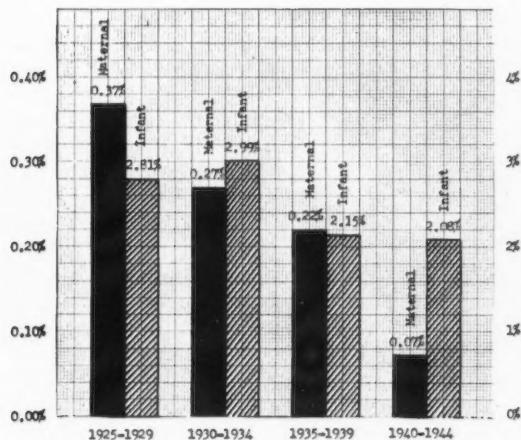


Chart 1.—Maternal mortality and infant mortality at the Hospital of the Good Samaritan in periods of five years. (Based on material from: Fagan, Robert H.: Maternal and infant mortality, West. J. Surg., Obst. & Gynec., 55:584-596, November, 1947.)

the maternal mortality rate (from 0.37 per cent to 0.07 per cent) while the infant mortality rate decreased only from 2.81 per cent to 2.08 per cent (Chart 1). A high percentage of the infant deaths was due to prematurity.

Premature babies not only appear to be underdeveloped but are often in varying degrees of shock. Can this be partially due to an insufficient blood volume? Since anemia is almost a constant finding, perhaps what they need most for survival is blood.

Anemia is due to several factors: (1) The underlying cause of the premature labor may be abruptio placenta, or placenta previa, either of which would deprive the infant of its normal quota of blood. (2) Compression of the cord with the resulting interference of blood flow to the child. (3) Poorly developed blood-forming organs, which is characteristic of prematures. Such babies quickly use up their reserve supply of blood.³ (4) Immediate clamping of the cord deprives the child of blood present in the cord and placenta. At the 28th to 30th week in the circulatory system of the baby, cord, and placenta, it is believed about 50 per cent of the blood volume is in the cord and placenta. It is felt that the premature baby needs a good share of this cord and placental blood to give it the best chance for survival.

In 1885, Engle⁶ reported twice as great a mortality in premature infants whose cords were tied early as in those whose cords were tied late. This is understandable because the placenta reaches its maximum relative size at about the fifth month and contains a greater proportion of the fetoplacental blood volume.

There are times when the condition of the mother or baby, or both, makes it inadvisable to wait until the cord stops pulsating or the uterus to compress placental and cord blood into the baby, and since the giving of a transfusion to a premature baby in an incubator is a difficult and often traumatic procedure, it occurred to the authors that the immediate, gentle stripping of the cord and placental blood into

the baby might be the simplest and surest method of giving the blood they all seem to need. Also it was felt that, because of the need for haste, this might be the method of choice in term babies delivered by cesarean section. At term, about one-third of the total blood volume in baby, cord, and placenta is in the cord and placenta⁵ and part of this might benefit especially those babies who were in mild or severe shock following prolonged labor, forceps delivery, or other obstetrical procedures or conditions such as placenta previa, abruptio placenta, and compression of the cord.

In order to determine the effect of cord and placental blood upon infants, blood studies were made in three groups of cases: First, those in which the cord was clamped at once; second, those in which the cord was allowed to pulsate five minutes; and third, those in which the cord and placental blood was stripped into the infant.

Complete blood cell counts and bleeding and clotting time determinations were made in all cases within two hours of birth and on the fifth postpartum day. The counts were all done by the same laboratory and a large percentage by the same technician. The mothers were at term, Rh positive, had uneventful prenatal courses, normal labor and delivery. Demerol, scopolamine, and seconal were given for analgesia and a low spinal was the anesthetic used in all cases.

It has been known for years and proved by many workers^{2, 4, 10, 11, 13, 17, 18} that if there is a waiting period following delivery at term, before the cord is clamped, the baby will receive on the average of an additional 90 cc. of blood. Budin² (1876) and Schucking¹⁷ (1877) were the first to prove this fact. Schucking believed the increased volume occurred because the blood was forced into the child by uterine contractions. This has been noted by other workers, and the authors satisfied themselves that this was true by repeating Schucking's experiments and putting the child on scales with the cord attached and watching the weight increase, especially with each contraction of the uterus. This emphasizes that it is primarily the contracting uterus upon a blood-filled placenta which forces blood into the fetus, and not the pulsating of the cord.

Most observers, and especially De Marsh,⁴ believe this additional blood to be beneficial to the baby. It has been said that "not to let the baby have this blood is equivalent to allowing an adult to bleed 500 cc." Physiologically the baby needs this blood because: First, it helps fill the the capillary bed of the expanded lungs; second, it increases the iron reserve. Wilson, Alt, and Windle²⁰ state: "The amount of iron lost to the newborn when 100 ml. of placental blood is prevented from reaching the child amounts to 54 mg. This is enough to lower the hemoglobin level of a four-months-old infant from 12 to 9.3 gm. per 100 ml. of blood. It seems likely, therefore, that the loss of placental blood may predispose infants to anemia later, since the principal blood reserve lies in the circulating hemoglobin rather than in the tissues." Third, it lessens the

demand upon the splenic reservoir of blood.²¹ Fourth, in premature babies it lessens the demand upon the poorly developed blood-forming organs.³ Fifth, it is a source of nourishment which protects infants against the breakdown of body proteins. An increased excretion of nitrogen occurred in infants whose cords were cut early.¹⁶ Sixth, less weight loss and more rapid weight gains were noted when the cord was cut late. This was first observed by Schiff in 1892.¹⁶ Seventh, higher erythrocyte counts and hemoglobin values bridge more smoothly the transition from one source of oxygen to another by maintaining a higher oxygen carrying capacity.¹⁴ Eighth, it would help maintain an adequate blood pressure, since all premature infants have relatively low blood pressure readings.¹

The stripping of blood from the cord was started with caution, since it is a controversial procedure. De Lee³ states in his text: "It is an error to force blood of the placenta into the child by stripping the cord towards the child. This overloads blood vessels, causes icterus, melena, even apoplexy." However, after consulting various pediatricians, cardiologists, and obstetricians, it seemed doubtful that harm could be done if the stripping were done gently and slowly. If 100 cc. of Rh-positive blood were physiologically beneficial to the term baby (or about 50 cc. to premature infants) it would seem to make little difference whether it were: (1) forced into the baby by uterine contractions; (2) stripped into the baby, except that by stripping the baby received blood at once and with ease; or (3) given by syringe as a transfusion.

Several questions presented themselves in proceeding with the stripping method:

1. How much blood was stripped into the baby?
2. Through which cord vessels did it pass?
3. Where did it go immediately after leaving the cord?
4. Did it affect the blood pressure to a harmful degree?
5. What effect did it have clinically upon the infant and the blood picture, as compared to the other groups in the series?

The first, as to how much blood was stripped into the baby, was easily answered from reports in the literature,⁴ and by observations. The amount reported was about 100 cc. In the authors' cases, the minimum was 75 cc., and the maximum 135 cc., and there was no relationship between the long and the short cords as to the blood volume. The short cords had more tortuous vessels or larger vessel diameters, or both.

The second question, through which cord vessels did the blood pass, was answered by clamping off the umbilical vein and measuring the amount stripped from the hypogastric arteries, and in other cases clamping off the hypogastric arteries and measuring the amount stripped from the umbilical vein. Only a few drops could be stripped from the hypogastric arteries and about 100 cc. could be obtained from the umbilical vein.

Third, where did it go immediately after leaving

the cord? The blood from the umbilical vein passes directly into the ductus venosus, then into the inferior vena cava. A small amount passes through the hepatic veins. Thus, when blood is forced into the venous system, the pressure is distributed mainly up and down the infant's vena cava and its tributaries.

Fourth, did it affect the blood pressure? Venous pressure studies showed no significant change following stripping of the cord blood into the baby.

Venous Pressure Studies*

Subject: Female Infant A

Pressure in the umbilical vein:

Before stripping—

Vein occluded and baby crying 22 mm. Hg.

After stripping an estimated 100 cc. of blood

into the baby—

Vein occluded and baby not crying 11 mm. Hg.

Vein occluded and baby crying 20 mm. Hg.

Subject: Male Infant B

Pressure in the umbilical vein:

Before stripping—

Vein occluded and baby not crying 7 mm. Hg.

After stripping (rather rapidly) an estimated

100 cc. of blood into the baby—

Vein occluded and baby not crying 45 mm. Hg.

Five minutes later 11 mm. Hg.

It is believed the immediate rise in pressure was due, in this case, to the rather rapid stripping of blood into the baby.

Subject: Female Infant C

(With cord clamped midway between placenta and baby)

Venous pressure on baby's side 24.6 mm. Hg.

Venous pressure on mother's side 25.4 mm. Hg.

Approximately two minutes later 10 units of Pitocin® was given and the pressure on the mother's side rose to 110 mm. Hg., and then to 130 mm. Hg. This is extremely significant since it illustrates the method by which a baby obtains blood—the strongly contracting uterus causing a very high umbilical vein pressure which easily overcomes the relatively low venous pressure of the baby.

Uterine contractions and crying of the baby caused wide variations in umbilical pressures:

Uterus relaxed.....	10 mm. Hg.
Uterus contracting.....	18 mm. Hg.
Baby crying.....	18 mm. Hg.
	21 mm. Hg.
Baby at rest.....	8 mm. Hg.
	12 mm. Hg.

Further pressure studies are being carried out and will be reported at a later date.

Fifth, the clinical effect upon the infants receiving blood by stripping was beneficial. In the 50 cases no harmful effects were observed and there was no increase in icterus.

It is commonly thought that babies receiving this blood by "pulsating" or "stripping" have a high incidence of icterus. This was not borne out in the author's series, or by Franklin, Frankael, or Find-

*Venous pressures were recorded by using the phlebomanometer on the umbilical vein of a newborn baby with the placenta attached. The umbilical vein was obstructed with a hemostat. (See Figure 1.)

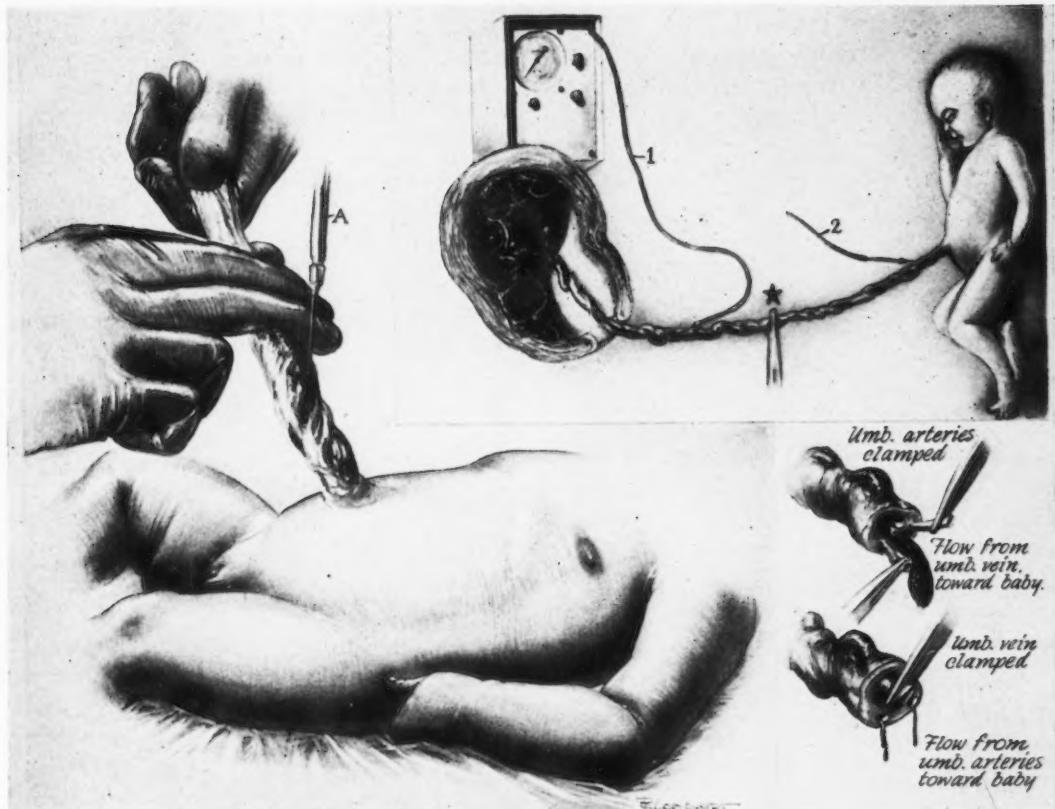


Figure 1.—Showing the method used in determining venous pressures.

lay, Higgins, and Stanier,^{7, 8, 9} who could detect no difference in rates of fall of hemoglobin as between infants who were jaundiced and those who were not. Another argument against a theory of excessive hemolysis is that no hemolysin can be demonstrated in the blood of the newborn (except in erythroblastosis).^{7, 19} Hoet¹² and Renaer¹⁵ explain icterus in terms of failure of the liver to excrete pigment at the normal rate. With this, Weech¹⁹ agrees, stating that if hepatic function is mature, excretion will be prompt; if immature, excretion will be delayed and serum concentration of bilirubin will rise.

In the series here reported there were 42 cases in which the cord was clamped at once, 36 cases in which the cord was allowed to pulsate five minutes, and 50 cases in which the cord and placental blood was stripped into the baby. For the sake of simplicity they shall be referred to as "clamped," "pulsating," and "stripped."

It is believed that the blood cell counts made on the fifth day offer a truer picture than the counts made at two hours, since the later counts reflect hematologic adjustment. The difference might be compared to the difference in accuracy between evaluation of the blood picture immediately following a blood transfusion or a hemorrhage, and evaluation some time later.

Table 1 and Chart 2 show the average erythrocyte count at two hours and at five days, in the three classes—clamped at once, pulsating, and stripped. It is interesting to note the relatively small drop in the "stripped" cases. This is against the general impression that more blood causes icterus.

TABLE 1.—Average Erythrocyte Count at 2 Hours and at 5 Days in Three Classes: Clamped at Once, Pulsating, and Stripped.

Class	Expressed as		Differ- ence Per Cent of Aver. at 2 Hours
	Average at 2 Hours	Average at 5 Days	
Clamped at once	5,377,073	4,946,097	430,976 —8.02
Pulsating	5,958,888	5,369,166	589,722 —9.90
Stripped	5,851,800	5,742,800	109,000 —1.86

The difference between the averages for clamped and pulsating are about the same as in other published series.^{4, 10} The difference between the averages for "clamped" and "stripped" at five days—796,703 erythrocytes—is much greater and certainly significant.

Table 2 shows the number of cases in each of the three classes—clamped at once, pulsating, and

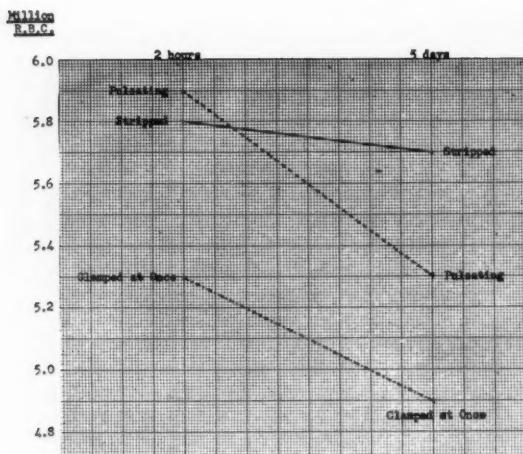


Chart 2.—Relation between the averages of erythrocyte counts at two hours and at five days in the three classes—clamped at once, pulsating, and stripped.

TABLE 2.—Number of Cases in Each of the Three Classes (Clamped at Once, Pulsating, and Stripped) in Which the Erythrocyte Count at 5 Days Showed Lower Values Than at 2 Hours

Class	Total Number of Cases	No. of Cases Showing a Decline at 5 Days	Expressed as Per Cent of Total Number
Clamped at once	41	31	75.6
Pulsating	36	27	75.0
Stripped	50	29	58.0

stripped—in which the erythrocyte count at five days was less than at two hours. In 42 per cent of the "stripped" cases there was no decline at all.

Chart 3 shows the relation between the averages of erythrocyte counts at two hours and at five days in cases in which the counts were above average at two hours: There was a rapid drop in all three groups, but it was less in the stripped group.

Chart 4 shows the relation between the averages of erythrocyte counts at two hours and at five days in cases in which the counts were below average at two hours: In this group there was a much less rapid drop in the clamped-at-once and pulsating categories; in the stripped cases there was an actual increase.

Chart 5 shows average weights at birth, at the time of lowest reading, and at five days in the three classes. In the clamped-at-once category, the average decline from the birth weight to the lowest weight was 7.7 per cent; in the pulsating group, 6.9 per cent; in the stripped group, 4.3 per cent. Thus, in those cases in which the cord was stripped, the babies weighed more, because of receiving more blood, they lost weight less rapidly and their total loss was less.

Chart 6 shows the average hemoglobin content, expressed in grams per 100 cc., at two hours and at five days after birth. Here again stripping showed to

advantage: There was no fall in hemoglobin in the stripped group at five days, whereas there was a considerable fall in the pulsating and clamped groups.

It is believed that five minutes is not long enough to wait in the pulsating group; had more time been allowed, it is probable that a more striking difference would have been noted between the pulsation group and the clamped series.

Do anemic mothers have anemic babies? The authors do not have enough cases to draw definite conclusions regarding this question; however, in

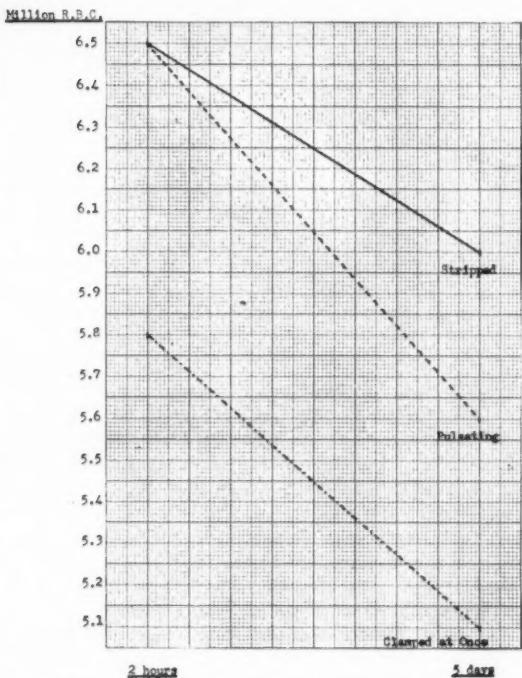


Chart 3.—Relation between the averages of erythrocyte counts at two hours and at five days in cases above average at two hours—clamped at once, pulsating, and stripped.

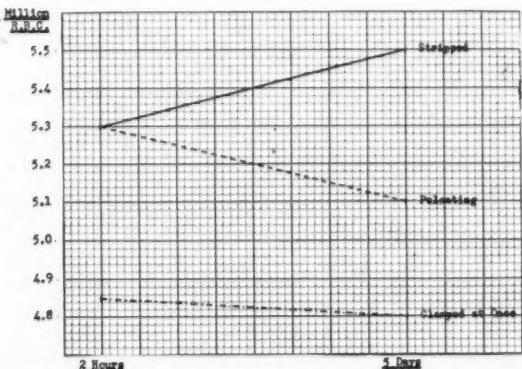


Chart 4.—Relation between the averages of erythrocyte counts at two hours and at five days in cases below average at two hours—clamped at once, pulsating, and stripped.

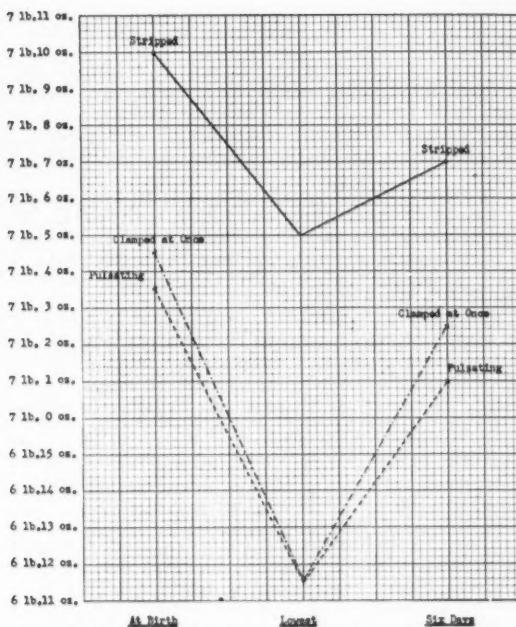


Chart 5.—Average values at birth, at time of lowest reading, and at six days in the three classes—clamped at once, pulsating, and stripped.

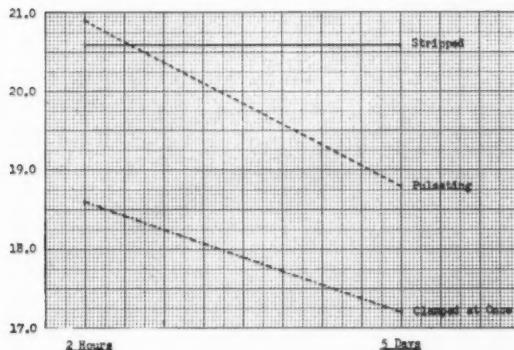


Chart 6.—Average hemoglobin content expressed in grams per 100 cc. at two hours and five days after birth—clamped at once, pulsating, and stripped.

the cases of ten mothers who had low hemoglobin values (72 per cent or under) on their fifth postpartum day and who had lost less than an estimated 200 cc. of blood at delivery, there was a tendency toward lowered hemoglobin content in the blood of the babies. The babies in these ten cases had an average of 15.8 grams of hemoglobin per 100 cc. (a value of 93.8 per cent) compared with the average in the clamped group of 17.5 grams per 100 cc. and a value of 102.4 per cent.

In order to determine the usual practice regarding the management of cord and placental blood, and to obtain an opinion regarding the possible harmful effects of "stripping" the cord, a questionnaire was sent to 1,900 diplomates of the American Board of Obstetrics and Gynecology. Replies (1,198) came

from almost every state. Tables 3, 4 and 5 show the results.

TABLE 3.—Time of Clamping the Umbilical Cord

1,198 answers received to 1,900 questionnaires sent to diplomates of the American Board of Obstetrics and Gynecology		
Cord clamped immediately after birth	497	41.5%
Cord clamped less than 5 minutes after birth	400	
Cord clamped after pulsations have ceased	191	
Cord clamped somewhat later; exact time not indicated	110	
Number of cases in which cord was clamped somewhat later	701	58.5%
Total number of answers	1,198	100.0%

TABLE 4.—Stripping of the Umbilical Cord

1,198 answers received to 1,900 questionnaires sent to diplomates of the American Board of Obstetrics and Gynecology		
Obstetricians stripping the cord:		
Occasionally	53	
Frequently	1	
Always	22	
In prematures	21	
Not specified	358	
Number of obstetricians stripping the cord	455	38.0%
Number of obstetricians not stripping the cord	743	62.0%
Total number of answers	1,198	100.0%

TABLE 5.—Obstetricians Reporting Harmful Effects from Stripping of the Umbilical Cord

Number of obstetricians practicing stripping of the umbilical cord	455	
Obstetricians complaining about harmful effects of stripping	6	1.3%
<i>Nature of Complaint</i>		
Icterus	5	1.1%
Cardiovascular distress (following vigorous stripping)	1	0.2%

From these figures it must be concluded that there has been no uniformity as to the teaching in our medical schools regarding the management of cord and placental blood and no consistency of practice among specialists in obstetrics. However, of 455 specialists who stripped the cord, only one noted harmful effects other than icterus, and this a questionable effect of stripping.

PHYSIOLOGY OF FETAL-PLACENTAL CORD CIRCULATION

The fetal circulation is well known to all obstetricians up until the delivery of the child. What happens and what should be done between the second and third stages of labor has caused a great deal of confusion and there is wide variance in practice. The authors believe that as soon as the child is delivered there is an immediate reduction in the size

of the placental site, the placenta begins to separate at once, and thus placental circulation is disrupted. Then the uterus contracting upon a blood-filled placenta forces blood through the umbilical vein into the baby. It has been shown that the strongly contracting uterine muscle causes a high venous pressure which easily overcomes the weaker venous pressure of the fetus. The umbilical vein remains dilated long after the umbilical arteries have ceased to pulsate. The cessation of pulsation of the cord is not the criterion as to the proper time for clamping the cord. Instead, when the contracting uterus no longer causes pressure in the umbilical vein, *that* would be a much better time to sever the cord. De Marsh, Alt, Windell, and Hillus⁴ found that after the cord stopped pulsating they were able to obtain an average of about 60 cc. from the cord by stripping.

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The authors wish to thank all those who aided in this study; the nursery and delivery room nurses, the record room personnel of the Hospital of the Good Samaritan; the clinical laboratory which donated time and material, and Dr. Travis Windsor, head of the Cardiovascular Foundation at the Hospital of the Good Samaritan, without whom the venous pressure studies could not have been done.

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Bacterial Meningitis and Other Diseases Affecting the Meninges

A Review of 349 Cases

WILLIAM L. COVER, M. D., *San Bernardino*

SUMMARY

Three hundred and forty-nine cases of disease affecting the meninges were observed at the San Bernardino County Charity Hospital in an eight year period.

A total of 29 patients with meningococcal, *H. influenzae* and pneumococcal meningitis were treated. There were four deaths, of which three occurred during the first 24 hours in the hospital.

Of 22 cases of unclassified meningitis, four probably were tuberculous, four probably were meningococcal and two probably were of virus origin.

Under present treatment programs the differentiation between viral and bacterial meningitis is difficult and it is possible, therefore, that the reported incidence of the two groups may not represent the facts.

Of 22 cases of unclassified meningitis, 12 had no specific characteristics which would permit a clinical diagnosis. One of the patients died.

Of 70 cases of clinical meningitis, the infecting organism was identified in 69 per cent.

Meningococcal meningitis made up only 17 per cent of 70 cases of purulent meningitis observed between July 1, 1945, and July 1, 1948.

FAILURE to find the causative agent in 31 per cent of series of 70 cases in which clinical and laboratory evidence was indicative of bacterial meningitis suggested that a broad inquiry into the field of "meningeal disease" as it has occurred over a period of eight years in a stable community might warrant description and comment.

Approximately 90 per cent of the patients with poliomyelitis and meningitis reported to the San Bernardino County health officer are cared for in the contagious disease ward of the San Bernardino County Charity Hospital (Table 1). It is the only facility which accepts contagious disease occurring among the civilians in a county of 20,157 square miles with a population estimated at 264,895 (Table 2). Although only 60 miles from Los Angeles, distance and topography result in a concentration of serious contagious disease cases in this hospital, which probably makes its experience more representative of a given geographical area than that of most isolation units.

From the Medical Service, San Bernardino County Charity Hospital.

Discharge diagnoses of diseases affecting the meninges were recorded on 349 patients admitted to the contagious disease ward between July 1, 1940, and July 1, 1948. In 154 of these cases the disease was considered to be of viral origin, as indicated in Table 3.

A more detailed study was made of the 144 patients in this category admitted after July 1, 1945, when penicillin was first generally used in this hospital. This group comprised 48 cases in which the infective agent was demonstrated, 22 cases of probable bacterial disease and 74 cases thought to be of viral origin.

The current literature^{3,5,9} contains no reports in which the incidence of cases of bacterial meningitis and virus diseases presenting meningeal signs is compared, yet the borderline between the virus infections of the central nervous system, tuberculous infections, and the penicillin-sensitive and sulfonamide-sensitive bacterial meningitis is less clear-cut than one might suppose.

The incidence of certain of these etiologically unrelated diseases in the state and in San Bernardino County is compared in Chart 1. During an eight year period in this hospital the seasonal incidence of epidemic meningitis, "unclassified" meningitis and poliomyelitis (Chart 2) indicates that the curve representing "unclassified" meningitis has two peaks, one corresponding to the peak incidence of epidemic meningitis and the other corresponding to the peak incidence of poliomyelitis. Although these figures are not statistically significant in this small series, it is suggested that the "unclassified" group contains appreciable numbers of cases of virus infection of the central nervous system. In a smaller series an attempt is made in Chart 3 to break down the unclassified group into clinical entities.

As might be expected, it proved to be impossible to reconcile the state, county and hospital statistics. Differences in the reporting year make direct comparisons impossible, and Table 1 indicates the extent to which disease entities other than meningococcal meningitis swell the reported incidence of "epidemic meningitis."

Chart 1 is drawn from data furnished by the California State Department of Health. Table 1 is derived from the contagious disease register of the San Bernardino County Health Department and subsequent cross-check with the San Bernardino County Charity Hospital files.

Data derived directly from the case records of the San Bernardino County Charity Hospital were used in compiling Tables 3 and Tables 5 to 13 and Chart 3.

TABLE 1.—*Proportion of Patients With Meningeal Disease Reported to San Bernardino County Health Officer Who Were Treated at the San Bernardino County Charity Hospital.*

	1942		1943		1944		1945		1946		5-Year Average Per Cent
	Cases	Per Cent									
Poliomyelitis	4	50	23	100	5	80	10	90	25	84	88
Encephalitis*	1	0	0	0	2	100	3	100	3	100	89
"Epidemic" Meningitis†	1	100	21	86	11	91	15	100	16	88	91

* Includes one case of mumps encephalitis.

† Includes eleven cases not due to meningococcal infection, but treated at the San Bernardino County Charity Hospital. Of the six cases not treated at the San Bernardino County Charity Hospital, three were treated in military hospitals.

TABLE 2.—*Characteristics of San Bernardino County—Population and Climate*
(Data furnished by the Office of the County Board of Supervisors)

Climatic Zones	Estimated Population	Summer Temperature	Winter Temperature	Rainfall
Mountain	9,506	35° to 80°	-5° to 50°	36 in.
Desert	32,566	71° to 104°	35° to 61°	5 in.
Valley	222,823	57° to 96°	37° to 67°	19 in.

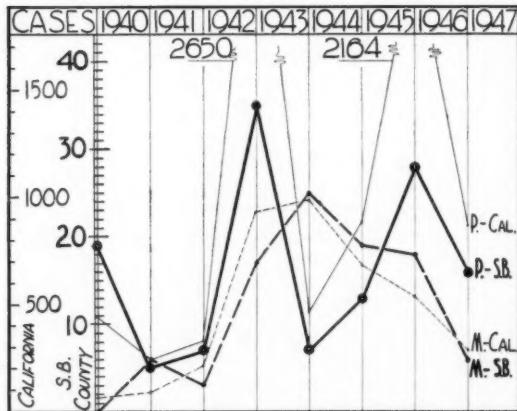


Chart 1.—The reported incidence of poliomyelitis and meningococcal meningitis in California and in San Bernardino County in 1940-1947. (Courtesy of J. A. Moore, M.D., Chief, Acute Communicable Disease Service, State of California, Department of Public Health.) Legends: P—Poliomyelitis; M—Meningitis; CAL.—California; S.B.—San Bernardino County.

The routine admission procedure at this hospital involves examination of the patient by the clinic intern and by the ward intern, with resident and staff consultation as indicated. The records show that this procedure was generally followed. Lumbar puncture was often done in the clinic prior to admission and almost always before treatment was started. The routine blood count, urinalysis, and serological tests for syphilis, however, were not generally done until the next morning on patients admitted in the afternoon.

The spinal fluid was examined for cells, organisms, globulin (Pandy test) and sugar routinely. Cultures were made in the laboratory on blood agar plates. Thioglycollate media with or without blood, or added paraminobenzoic acid, and Loeffler's media were used as indicated. High carbon dioxide tensions were often used. Penicillinase was rarely used. In general, the spinal fluid chloride level was determined only in cases in which tuberculosis was suspected, and

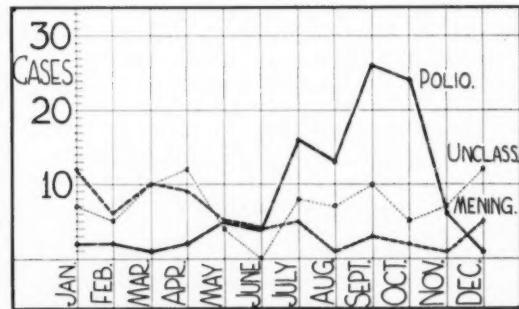


Chart 2.—The seasonal incidence of poliomyelitis, meningococcal meningitis and unclassified meningitis at the San Bernardino County Charity Hospital from July 1, 1940 to July 1, 1948.

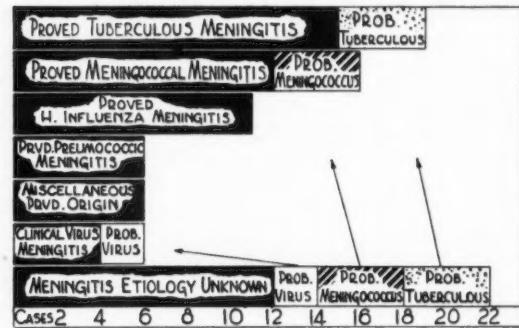


Chart 3.—Meningitis at the San Bernardino County Charity Hospital from July 1, 1945 to July 1, 1948.

a few tuberculosis cultures and guinea pig inoculations were done. Pneumococcus and H. influenzae typing was done on the spinal fluid sediment and on cultures as indicated.

Blood cultures were rarely taken and none was reported as positive. No positive smears or cultures were reported from petechiae.

Two specimens of blood from each of six patients were sent to the virus unit of the California State Department of Health and all were reported negative for St. Louis encephalitis, western equine encephalomy-

TABLE 3.—Meningeal Diseases at the San Bernardino County Charity Hospital, 1940-48

	1940-48		1940-45		1945-48		Mortality		Corrected Mortality [‡] 1945-48
	Cases	Deaths	Cases	Deaths	Cases	Deaths	1940-45	1945-48	
Poliomyelitis*	102	6	57	5	45	1	9%	2%	...
Encephalitis*	43	9	18	6	25	3	33%	12%	...
Lymphocytic choriomeningitis*	9	0	5	0	4	0	0	0	...
Total virus diseases	154	15	80	11	74	4	0	0	...
Tuberculosis†	50	50	37	37	13	13	100%	100%	...
Meningococcus†	62	10	50	9	12	1	18%	8%	8%
H. Influenzae†	20	9	9	7	11	2	78%	18%	0
Pneumococcus†	14	7	8	6	6	1	75%	17%	0
Other identified†	12	5	6	4	6	1	66%	17%	17%
Total identified meningitis	158	81	110	63	48	18	...	...	...
Unclassified meningitis*	37	9	15	4	22	5	27%	23%	...
Total clinical meningitis	195	90	125	67	70	23	...	...	...
Total meningeal disease	349	105	205	78	144	27	...	...	...

* Clinical diagnosis only. † Proved diagnosis. ‡ Deaths under 24 hours excluded.

TABLE 4.—Bacterial Meningitis in Three Hospitals

	Cook County*	San Francisco County†	San Bernardino County‡	
	1943-45 Cases	1943-46 Cases	1940-45 Cases	1945-48 Cases
M. Tuberculosis	12	14	37	13
N. Meningococcus	297	182	50	12
H. Influenzae	10	7	9	11
D. Pneumoniae	26	40	8	6
Other identified	4	22	6	6
Unclassified	51	...	15	22
Total cases in series	400	265	125	70

* Cook County Contagious Disease Hospital, 15 months, December 1, 1943 to March 1, 1945. Meningococcus group includes 17 per cent diagnosed on clinical grounds alone. Reported by Rhoads.⁶

† San Francisco Hospital, Isolation Division, 24 months, January 1943 to February 1946. Diagnostic criteria not stated. Reported by Brainerd and Bradley.³

‡ See Table 3, 60 and 36-month periods respectively.

itis and mumps encephalitis. Two of these were also negative for lymphocytic choriomeningitis.

M. Tuberculosis Meningitis

Thirteen patients with bacteriologically or pathologically proved tuberculous meningitis were treated as indicated in Table 5. All died. Nine were males. Six were aged two or less and four more were under the age of five years. Eight were of Mexican parentage. Only those patients presenting meningeal symptoms on admission to hospital or dying with predominating symptoms of meningeal disease are included in this group; patients with general tuberculosis and minor meningeal involvement are omitted.

Symptomatically related illness preceded hospital admission by one to three days in five cases; in the remaining eight cases the patients had been ill up to eight weeks. All but three had stiffness of the neck and a positive Kernig's sign. None was in deep coma and three had no detectable blunting of consciousness. Four children had convulsions before admission and another child had some weakness of the left facial nerve. One had chronic otitis media.

Four patients were previously known to have pulmonary tuberculosis and three other patients (under

age four) were known to have been in contact with open tuberculosis. No source of infection was uncovered in four cases in which apparently adequate data were available.

The temperature on admission ranged from 97.6° F. to 103.4° F.; it was 101° F. or below in nine cases.

The leukocyte count ranged from 6,900 to 28,000; only three patients had admission counts under 14,500.

The spinal fluid showed pleocytosis of from 30 to 2,200 cells with zero to 82 per cent polymorphonuclear cells in 12 cases. Spinal fluid under increased pressure but containing only 6 cells was found in another case. The count was below 100 in four cases and over 1,000 in one case. Polymorphonuclear cells exceeded 50 per cent in only two specimens.

Spinal fluid globulin was reported as normal in three specimens containing 30 to 575 cells. Spinal fluid sugar ranged from 17 to 73 mg. per 100 cc. in 11 specimens and was below 50 mg. per 100 cc. in eight specimens. The Levinson test was negative on four occasions on one patient.

The spinal fluid chloride content was below 600 mg. per 100 cc. in one case, between 600 and 650 mg. in four cases and above 650 mg. in six cases.

Table 6.—Meningococcus Meningitis; 12 cases, 1 death.																				
BB	F	W	3	2	2+	+	1+	0	+	101.2	-	cloudy	90	2+	20	-	+	0		
BB	F	W	3	2	2+	+	1+	0	+	103.6	32.0	990	0	-	+	0	9	2		
LC	M	W	2	6/24	+	+	1+	+	+	103.6	32.0	990	0	-	+	1	14	6		
M	W	52	12/24	3+	+	1+	0	0	98.8	12.4	12,500	100	-	12	-	0	0	15	+	
JR	M	W	52	12/24	3+	+	1+	0	0	98.8	12.4	12,500	100	-	12	-	0	0	15	+
SL	F	N	59	3	3+	+	4+	0	+	104.6	38.6	5,600	94	+	13	-	0	1	3	7
CA	M	M	27	4	3+	+	2+	0	0	102.2	9.5	900	++	-	-	+	0	3	10	+
SN	F	W	13	1	+	3+	2+	0	0	103.4	35.0	8,100	100	+	10	-	+	1	9	3
LG	M	M	4	2	2+	+	1+	0	0	102.0	15.0	30,000	110	+	12	640	+	2	22	8
SF	F	W	10	2	4+	+	3+	0	+	103.8	-	6,000	95	+	22	-	+	1	5	3
AE	M	W	68	1	1+	+	0	0	0	97.8	19.4	1,200	98	+	14	-	+	0	0	4
GP	M	W	4	1	2+	+	1+	0	0	104.8	21.0	4,000	99	+	43	-	+	1	7	3
RZ	M	W	4	2	3+	+	0	+	+	104.0	29.5	12,000	83	+	38	758	+	1	2	3
KW	M	W	11 $\frac{1}{2}$	11 $\frac{1}{2}$	2+	+	0	+	+	105.0	12.7	12,800	90	-	-	+	0	1	8	+

Table 5.—Tuberculous Meningitis: 13 cases, 13 deaths. (Guinea pig inoculation listed under "Type")

Table 6.—Meningococcus Meningitis: 12 cases 1 death

Key to symbols used in Tables 5 to 13: N = Normal values. O = None present. + = Test positive or drug given. - = Test not done or drug not given. = Test not done or drug not given. "D" = Leserle Group "D" pneumococcus, type not identified.

++ Blood negative for Western Equine Encephalitis, St. Louis Encephalitis & Mumps * = Intramuscular injection. † = Intrathecal injection.

ON ADMISSION

SPINAL FLUID ON ADMISSION

TREATMENT

NAME	AGE, YEARS	SEX	PLACE	DURATION OF ILLNESS, DAYS	COURSE		TREATMENT
					TEMPERATURE	PURPURA	
BO	M	M	4	5	4+	+	3+
LB	F	W	3½	2	2+	+	1+
JR	M	W	5	1	3+	+	4+
JD	M	W	5½	4	4+	+	0
DM	M	M	1½	7	1+	+	0
LG	M	W	3	?	2+	+	1+
JD	M	W	1	12½	1+	4+	0
GC	M	W	9½	12½	4+	+	1+
RP	M	W	4	18½	0	2+	0
CC	F	W	1	12½	1+	1+	2
JS	F	M	8½	7	3+	+	2+

Table 7.—H. Influenzae Meningitis; 11 cases, 2 deaths.

NAME	AGE, YEARS	SEX	PLACE	DURATION OF ILLNESS, DAYS	COURSE		TREATMENT
					TEMPERATURE	PURPURA	
BO	M	M	4	5	4+	+	3+
LB	F	W	3½	2	2+	+	1+
JR	M	W	5	1	3+	+	4+
JD	M	W	5½	4	4+	+	0
DM	M	M	1½	7	1+	+	0
LG	M	W	3	?	2+	+	1+
JD	M	W	1	12½	1+	4+	0
GC	M	W	9½	12½	4+	+	1+
RP	M	W	4	18½	0	2+	0
CC	F	W	1	12½	1+	1+	2
JS	F	M	8½	7	3+	+	2+

Table 8.—Pneumococcus Meningitis; 6 cases, 1 death.

NAME	AGE, YEARS	SEX	PLACE	DURATION OF ILLNESS, DAYS	COURSE		TREATMENT
					TEMPERATURE	PURPURA	
ES	M	W	16	3½	4+	+	4+
JC	M	W	1	3½	4+	+	2+
RW	M	W	10	1	1+	0	0
RB	M	W	10	1½	0	0	0
RC	M	N	40	1/8	0	0	0
WL	M	W	46	1/3	4+	+	4+

Table 9.—Syphilitic Meningitis; 2 cases, 0 deaths.

NAME	AGE, YEARS	SEX	PLACE	DURATION OF ILLNESS, DAYS	COURSE		TREATMENT
					TEMPERATURE	PURPURA	
GS	M	M	26	4	1+	0	4½+
JC	F	W	3½	0	0	0	0
CJ	M	W	25	5	1+	0	0
JD	M	W	11½	14	2+	+	0
CC	M	W	41	5	1+	0	2+

Table 10.—Pseudomonas Pyocyanus Meningitis; 2 cases, 1 death.

NAME	AGE, YEARS	SEX	PLACE	DURATION OF ILLNESS, DAYS	COURSE		TREATMENT
					TEMPERATURE	PURPURA	
JM	F	W	3½	0	0	0	0
CJ	M	W	31	5	1+	0	0
JD	M	W	25	7	1+	+	0
CC	M	W	41	5	1+	0	2+

Table 11.—Staphylococcus Meningitis; 2 cases, 0 deaths.

NAME	AGE, YEARS	SEX	PLACE	DURATION OF ILLNESS, DAYS	COURSE		TREATMENT
					TEMPERATURE	PURPURA	
BO	M	M	4	5	4+	+	3+
LB	F	W	3½	2	2+	+	1+
JR	M	W	5	1	3+	+	4+
JD	M	W	5½	4	4+	+	0
DM	M	M	1½	7	1+	+	0
LG	M	W	3	?	2+	+	1+
JD	M	W	1	12½	1+	4+	0
GC	M	W	9½	12½	4+	+	1+
RP	M	W	4	18½	0	2+	0
CC	F	W	1	12½	1+	1+	2
JS	F	M	8½	7	3+	+	2+

Table 9.—Syphilitic Meningitis; 2 cases, 0 deaths.

NAME	AGE, YEARS	SEX	PLACE	DURATION OF ILLNESS, DAYS	COURSE		TREATMENT
					TEMPERATURE	PURPURA	
ES	M	W	16	3½	4+	+	4+
JC	M	W	1	3½	4+	+	2+
RW	M	W	10	1	1+	0	0
RB	M	W	10	1½	0	0	0
RC	M	N	40	1/8	0	0	0
WL	M	W	46	1/3	4+	+	4+

Table 10.—Pseudomonas Pyocyanus Meningitis; 2 cases, 1 death.

NAME	AGE, YEARS	SEX	PLACE	DURATION OF ILLNESS, DAYS	COURSE		TREATMENT
					TEMPERATURE	PURPURA	
GS	M	M	26	4	1+	0	4½+
JC	F	W	3½	0	0	0	0
CJ	M	W	25	5	1+	0	0
JD	M	W	11½	14	2+	+	0
CC	M	W	41	5	1+	0	2+

Table 11.—Staphylococcus Meningitis; 2 cases, 0 deaths.

NAME	AGE, YEARS	SEX	PLACE	DURATION OF ILLNESS, DAYS	COURSE		TREATMENT
					TEMPERATURE	PURPURA	
BO	M	M	4	5	4+	+	3+
LB	F	W	3½	2	2+	+	1+
JR	M	W	5	1	3+	+	4+
JD	M	W	5½	4	4+	+	0
DM	M	M	1½	7	1+	0	0
LG	M	W	3	?	2+	+	1+
JD	M	W	1	12½	1+	4+	0
GC	M	W	9½	12½	4+	+	1+
RP	M	W	4	18½	0	2+	0
CC	F	W	1	12½	1+	1+	2
JS	F	M	8½	7	3+	+	2+

Table 12.—Unclassified Meningitis; 22 cases, 5 deaths.

NAME	SEX	AGE, YEARS	DURATION OF ILLNESS, DAYS	KERMIT'S SIGN	COMA	CONVULSIONS	PURPURA	TEMPERATURE	LEUKOCYTES/1000	CELL COUNT	% POLYMORPHS	GLOBULIN	SUGAR, MG. PER 100 CC.	CHLORIDES, MG. PER 100 CC.	SMEAR	CULTURE	TYPE	DAYS FEVER OVER 103°F.	DAYS FEVER OVER 100°F.	N. SPINAL TAP	DAYS IN HOSPITAL	I.M. PENICILLIN	SULFADIAZINE	I.M. SULFAMYCETIN	I.T. SULFAMYCETIN	SERUM	COMPLEMENTATIONS AND	REFLEXES	TREATMENT	COURSE	SPINAL FLUID ON ADMISSION	ON ADMISSION
RS	F	N	10	3	1+	0	0	101.0	20.2	8,300	98	++	12	—	0	—	14	20	14	49	+	—	—	PTOSIS EYELID.								
CT	F	W	7	1	1+	+	1+	0	103.6	12.8	4,500	67	+	28	—	0	—	1	2	12	+	—	—	No residual.	?	Meningoceleus.						
EZ	M	W	66	1+	1+	+	3+	0	104.4	17.0	9,100	92	+	42	—	0	—	5	6	4	16	+	—	—	Otitis.	No residual.	?	Pneumococcus.				
HG	M	W	34	21	2+	+	‡	0	100.0	15.2	2,300	43	—	—	0	0	0	4	3	10	+	3	+	—	—	No residual.	—	—				
CO	M	N	35	14	3+	+	3+	0	102.2	—	1,240	36	+	62	—	0	—	2	2	2	—	+	—	—	Transferred.	?	Tbc.					
RN	M	W	4	5	1+	+	1+	0	103.0	14.3	1,490	90	+	64	—	0	—	1	3	5	16	+	—	—	No residual.	—	—					
MF	F	M	4	?	1+	+	4+	0	105.6	—	—	—	—	—	—	—	—	1	1	1/6	+	—	—	—	Died.	Autopsy.	?	Meningoceleus.				
CH	M	M	26	6	1+	0	0	100.6	9.4	1,250	86	+	59	—	0	0	—	0	1	2	13	—	—	—	—	—	—	Albuminuria.				
SH	F	W	2	1	2+	+	2+	0	104.2	38.4	10	0	—	—	0	0	—	1	8	1	20	+	—	—	—	—	—	—	Slit sloughs.	?	Meningoceleus.	
GL	M	W	9	2	1+	+	1+	0	101.0	8.2	850	60	+	84	680	0	0	—	0	3	2	9	+	—	—	No residual.	—	—	—			
DJ	M	W	7	1½	0	0	0	0	102.2	9.8	322	76	N	45	700	0	0	—	2	6	5	18	+	—	—	No residual.	—	—	—			
VR	M	W	76	?	1+	+	4+	0	100.0	11.2	725	34	+	35	—	0	0	—	0	8	1	8	+	—	—	Died.	Autopsy.	?	Meningitis.			
CH	F	W	5	3½	0	0	0	0	101.0	8.0	560	89	—	59	—	0	0	—	0	3	3	12	+	—	—	No residual.	—	—	—			
RG	M	M	7/12	7	0	0	0	+	100.6	12.5	130	15	N	10	—	0	0	—	0	24	6	24	+	—	—	Died.	?	Tbc.				
JU	M	W	30	1½	1+	+	1+	0	101.4	22.2	800	100	+	—	+	0	—	0	2	4	10	+	—	—	No residual.	—	—	—				
NT	M	W	7	1	1+	+	1+	0	102.2	10.2	+	?	N	71	—	0	0	—	0	1	1	6	+	—	—	No residual.	—	—	—			
RP	M	W	14	2	1+	0	0	0	99.4	9.1	50	20	N	40	620	0	0	—	0	3	14	+	—	—	No residual.	?	Virus.					
SK	F	M	21	3	1+	+	0	0	100.8	9.9	82	3	N	79	—	0	0	—	0	3	1	11	+	—	—	No residual.	?	Virus.				
DP	M	W	4/12	1	1+	0	0	0	105.8	22.8	40	100	N	73	776	0	—	2	3	3	10	+	—	—	No residual.	—	—	—				
RN	M	W	25	4	1+	0	0	0	101.0	10.4	42	75	—	—	0	0	—	0	1	2	5	+	—	—	No residual.	—	—	—				
PS	F	M	3½	14	3+	+	1+	0	99.4	14.5	200	10	+	43	696	0	0	—	0	0	1	4	—	—	—	Died.	?	Tbc.				
DS	M	M	9/12	7	0	0	1+	0	99.6	15.3	112	66	+	49	620	0	—	0	5	3	5	+	3	—	—	Died.	?	Tbc.				

Table 13.—(?) Lymphocytic Choriomeningitis: 4 cases. 0 deaths.

	AM	M	13	4	1+	0	0	0	101.2	10.3	400	90	+	65	700	0	0	4	2	7	6	18	0	0	—	—	No residuals.	
PW	F	W	13	3	0	0	0	0	99.0	5.7	50	0	N	84	728	0	0	+	0	0	1	14	0	0	—	—	No residuals.	
SM	F	W	6	4	0	0	0	0	102.0	6.4	25	1	N	58	704	0	0	+	0	0	2	3	14	0	0	—	—	No residuals.
RS	M	W	13	1	1+	+	0	0	101.0	7.0	20	0	N	55	728	0	0	+	0	1	2	4	+	+	—	—	No residuals.	

The diagnosis was established by the stained smear of spinal fluid sediment or pellicle in two cases, by culture in five additional cases and by guinea pig inoculation in four cases. Postmortem examination proved the diagnosis in the rest.

Three patients received streptomycin with some apparent temporary benefit, but later the disease progressed in spite of continued treatment.

Four patients in whom the diagnosis was obscure received standard penicillin treatment ranging from 960,000 units to 6,700,000 units. Two others received a few doses of penicillin, but medication was stopped on the basis of a clinical diagnosis of tuberculous meningitis unsupported by laboratory findings. Four of the penicillin-treated patients and two others received sulfadiazine.

Ten patients came to autopsy. In only four of these had diagnosis been made from laboratory data on specimens obtained during life, and in two of these the results of guinea pig inoculation and culture were reported after the death of the patients.

N. Meningococcus Meningitis

Twelve bacteriologically proved cases of meningococcus meningitis were treated, with death of one patient, as indicated in Table 6. Eight of the patients were males, three were three years of age or under, five more were 16 years of age or under and three were over 50 years of age. Two patients were of Mexican origin and one was a Negro.

Two patients had been ill three days or more. All had stiffness of the neck, a positive Kernig's sign and at least some dulling of consciousness on admission; only one was deeply comatose. Six had purpura, which was pronounced in one. Only one had had convulsions and none had evidence of a focal central nervous system lesion. One had a purulent otitis media; no other foci were noted.

The lowest temperature on admission was 97.8° F. in a patient with a leukocyte count of 19,450 and 1,200 cells in the spinal fluid. The highest temperature was 105° F. and in seven the temperature was over 103° F.

The leukocyte count was sometimes deferred until treatment was well under way; in six cases, however, it exceeded 20,000 on admission.

The spinal fluid cell count ranged from 900 to 30,000, with over 90 per cent polymorphonuclear cells, save in one case with 990 cells which were reported as large mononuclears.

The globulin was increased in eight cases. The spinal fluid sugar exceeded 45 mg. per 100 cc. in only one case, ranging from 12 to 65 mg. per 100 cc.

The spinal fluid was found to contain typical Gram-negative diplococci in every case; the culture was positive in eight of the twelve cases.

Sulfadiazine was given in standard doses in all cases, and penicillin in ten cases. Intrathecal penicillin in doses of 20,000 units was given to eight patients; one patient received seven doses and another nine. Routine supportive treatment was used as indicated.

Only the patient with a spinal fluid cell count of 30,000 maintained a temperature over 103° F. for two days; he and three others exceeded 100° F. for from nine to 22 days, and he was the only patient to remain in the hospital over 18 days. The average stay was 13 days.

Repeated spinal fluid examinations were made on nine patients. Three patients had cell counts of less than 15 on the eighth, thirteenth and sixteenth hospital days; two of these had received intrathecal penicillin. Three patients had cell counts of 400, 106 and 410 on the seventh, ninth and tenth hospital days respectively; two of these had received intrathecal penicillin and all were asymptomatic at the time.

No residual effects were noted on discharge.

H. influenzae Meningitis

Eleven patients with bacteriologically proved cases of *H. influenzae* meningitis were treated as indicated in Table 7. Two patients died, eight and twelve hours after admission. Eight patients were males. The oldest was five years of age and the youngest eight months. Three were of Mexican parentage.

Four had been ill 18 hours or less and three had been ill five days or more. All but one patient had stiffness of the neck and a positive Kernig's sign. Only one was deeply comatose. One had a rash not regarded as purpuric. Three had had convulsions and two had clear-cut evidence of a focal central nervous system lesion on admission. One patient had purulent otitis media on admission; no other foci were noted.

The lowest temperature on admission was 101° F.; six patients had a temperature over 103.8° F.

The leukocyte count in nine cases ranged from 12,900 to 27,000.

The spinal fluid cell count ranged from 490 to 7,500; it was below 2,000 in only two cases. In two cases all the cells were reported to be lymphocytes and the cell counts were 2,640 and 7,500. Other differential counts showed 78 per cent to 99 per cent polymorphonuclear cells.

The globulin content in the spinal fluid was above normal in nine cases. The spinal fluid sugar did not exceed 40 mg. per 100 cc. and was 10 mg. per 100 cc. in two instances.

Organisms morphologically resembling *H. influenzae* were found in the spinal fluid smear in each case, and the organisms from seven of the patients showed capsular swelling with Type "B" *H. influenzae* serum. Spinal fluid cultures were sterile in three of the 11 patients.

Sulfadiazine was given in standard doses to all. Penicillin was given to all but one patient and was given intrathecally to one patient.

Streptomycin was given intramuscularly in varying doses and intrathecally in 25 to 50 mg. amounts to ten patients.

Anti-*Hemophilus influenzae* Type "B" serum was given to four patients.

Fever over 103° F. lasted one day in four patients and two days in five patients; fever fell below 100° F. in two to twelve days with an average of seven days.

Three patients had secondary febrile episodes, and in two cases these were accompanied by an exacerbation of meningeal signs.

Spinal fluid examinations on six patients on the fifth, seventh, tenth, sixteenth, twentieth and twenty-fourth hospital days showed cell counts ranging from zero to 44 cells.

No residual neurological defects were noted on discharge. The hospital stay ranged from seven to 29 days and averaged 20 days.

Pneumococcal Meningitis

Six patients with bacteriologically proved pneumococcal meningitis were treated as indicated in Table 8. All were males. Their ages ranged from one to 49 years. One was a Negro. One patient died 14 hours after admission.

The two adults had been ill for three to seven days; the children less than 24 hours. All had stiff neck. Three were deeply comatose; one was mentally clear. Two had had convulsions. None had purpura.

The temperature on admission ranged from 102° F. to 105.6° F.

The leukocyte count varied from 10,100 to 31,000.

The spinal fluid cell count in five cases varied from 5,200 to 13,800 and in the sixth case was "purulent." Polymorphonuclear cells exceeded 81 per cent in all specimens. The globulin was increased in five and normal in one. The spinal fluid sugar content was normal in three and between 13 and 27 mg. per 100 cc. in three.

The pneumococcus was identified morphologically in all cases and was typed directly from the spinal fluid in three cases. Two patients showed Type VI and one Type XI pneumococcus. Pneumococci cultured from patient R. W. (Table 5) could not be typed beyond "group D," comprising Types X, XI, XIII, XX, XXII and XXIV.

Penicillin and sulfadiazine were given in all cases.

One patient had an encephalocele which was unrecognized through three bouts of meningitis. He has been well since receiving appropriate neurosurgical treatment.

One patient had long standing purulent otitis media. He recovered promptly from a very severe pneumococcal meningitis, but before submitting to radical mastoidectomy had two more bouts of meningitis.

One patient entered with signs of acute otitis media in addition to meningitis. The otitis and the meningitis cleared promptly on routine therapy but eight severe relapses occurred in the subsequent 41 days before the sphenoid sinus was opened. Recovery was then uneventful and the patient was discharged on the 57th day with slight residual VIII and XI cranial nerve impairment.

One patient entering with acute otitis media required only medical management.

Staphylococcal Meningitis

The incidence of streptococcal and staphylococcal meningeal infections here reported is essentially that of cryptogenic infections in which the primary focus

was not found on admission. Patients in whom meningeal infections develop secondary to trauma, ear and sinus infections, bacteremia due to distant foci of acute or chronic infection and patients with terminal cachexia and bacteremia are not generally given a primary diagnosis of meningitis and their records therefore are not available for review. Since such cases rarely present a diagnostic problem and since treatment and prognosis are essentially those of the underlying disease, this defect in coverage is not of great significance.

Only two proved cases of staphylococcal meningitis were reported. One occurred in a man 41 years of age with supposedly inactive osteomyelitis of 15 years' duration. He had stiffness of the neck, a temperature of 102° F., a leukocyte count of 19,250 and spinal fluid pleocytosis of 1,500 with 40 per cent polymorphonuclear cells. The smear and culture showed staphylococci. An epidural abscess developed and the patient recovered after drainage and 17 days of treatment with penicillin and sulfadiazine.

A boy 11 months of age was admitted with a history of stiffness of the neck for 14 days. The temperature was 103° F., the leukocyte count 15,600. The spinal fluid contained 2,300 cells and the smear and culture showed staphylococci. No focus of infection was demonstrated. The patient recovered after receiving 100,000 units of penicillin every three hours for 27 days, various sulfonamides for 17 days and streptomycin for two days.

Pseudomonas Pyocyanus Meningitis

A man 25 years of age was found to have pseudomonas pyocyanus meningitis when he complained of headache of seven days' duration and was admitted to the hospital with stiff neck and a temperature of 100° F. The leukocyte count was 11,200, and 970 leukocytes were found in the spinal fluid. The patient was afebrile on the third day of 12 days of treatment with penicillin, 20,000 units every three hours, and sulfadiazine.

A three-month-old infant with multiple congenital deformities which included a meningocele developed pseudomonas pyocyanus meningitis and died. Only supportive treatment was given.

Syphilitic Meningitis

Two patients with syphilitic meningitis were observed. Both responded immediately to treatment with penicillin.

Virus Infections

Virus diseases (Table 3) are included in this report to serve as an index of the diagnostic difficulties to be encountered in evaluating meningeal signs, rather than for individual consideration. Chart 1 contrasts the incidence of poliomyelitis and epidemic meningitis in California and San Bernardino County. Chart 2 indicates the seasonal incidence of these diseases in this series.

The incidence of epidemic meningococcal meningitis, as reported, generally includes many questionable cases diagnosed on clinical grounds alone;

reported cases of poliomyelitis are even less subject to critical evaluation.

From July 1, 1940, to July 1, 1948, the staff of the San Bernardino County Charity Hospital treated 102 patients with poliomyelitis with six deaths, and 43 patients with encephalitis with nine deaths.

Between August 28, 1947 and January 16, 1948, a clinical diagnosis of lymphocytic choriomeningitis was made in four children aged six to 13 years. Blood specimens sent to the State Department of Health were reported as negative for western equine encephalitis, St. Louis encephalitis and mumps. Symptoms were of one to four days' duration, with stiff neck in two cases and a temperature from 99° F. to 102° F. The leukocyte count ranged from 5,700 to 10,300. In three cases the spinal fluid contained 20 to 50 cells per cu. mm., all lymphocytes; the globulin, sugar and chloride contents were normal. In a fourth case the spinal fluid cell count was 400 with 90 per cent polymorphonuclear cells and an increase in globulin. All the patients were asymptomatic in one to five days. Only one received penicillin. The accuracy of the diagnosis is open to question.

Unclassified Meningitis

There were 22 cases in which meningeal signs, symptoms and spinal fluid abnormalities were observed but no infecting organism was identified. Five of the patients died and autopsies were done on two.

(a) Four of the 22 patients probably had tuberculous meningitis. One of them had known tuberculosis of the bone; one, an infant, had been exposed to tuberculosis; one was transferred to a Veterans Administration hospital in a serious condition after two days and had obvious advanced pulmonary lesions, and the fourth died in 24 days after a typical course. Permission for autopsy was refused in three cases and no report was obtained regarding the fate of the patient transferred to the Veterans Administration hospital.

(b) Four patients presented a picture highly suggestive of meningococcal meningitis. One, M. F. (Table 5) died in four hours. The others responded promptly to treatment and recovered without residual effects. The patient who died and one other, S. H., had petechial skin lesions.

(c) Two patients included in this group probably did not have bacterial meningitis. Both had a brief illness, a temperature under 101° F., a normal leukocyte count, and spinal fluid cell counts of 50 and 82 with polymorphonuclear percentages of 20 and 3 per cent, respectively. One received penicillin for 24 hours and was discharged in 14 days. The virus unit of the State Department of Public Health reported two specimens negative for lymphocytic choriomeningitis. The other patient had received penicillin prior to admission, was given only sulfadiazine for seven days and was discharged well in 11 days.

(d) Two patients had significant complicating diseases:

A girl of ten years had Class IIC rheumatic heart disease which so complicated the illness as to make

evaluation of the meningeal components impossible; she was discharged improved on the 49th day.

One man, aged 76, had a spinal fluid cell count of 725 on admission, but his death on the eighth day was largely due to nephrosclerosis and age. Meningeal signs had abated.

(e) Four patients had moderately severe acute illnesses antedating admission by one to six days. Three were males. One was a Mexican. The ages were four, 26, 34 and 66 years. Each had a stiff neck; three were not mentally clear. The admission temperature ranged from 100° F. to 104.4° F. The leukocyte count varied from 9,400 to 17,000; the spinal fluid cell count from 1,250 to 9,100. Polymorphonuclear cells made up 43 per cent of the count in one case and exceeded 86 per cent in the remainder. The globulin was increased in three. The spinal fluid sugar was 42 mg. per cent in one case and normal in two. No organisms were identified on smear or culture of the spinal fluid.

Three patients were given penicillin and one of these received intrathecal penicillin three times. All four were given standard doses of sulfadiazine.

One patient (aged 66) had a temperature over 103° F. for five days but was discharged well in 16 days. Three patients were afebrile in three days and were discharged well in ten to 16 days.

The clinical course of this group was indistinguishable from that of proved cases of meningococcal and uncomplicated pneumococcal meningitis.

(f) The remaining six patients had relatively mild illnesses antedating admission by one to four days. Stiff neck was mild in four and absent in two. Only two showed any clouding of consciousness. Age ranged from four months to 30 years. Five were males and all were white. The infant four months old had a temperature of 105.8° F. on admission; the temperatures of the others were below 102.2° F.

The leukocyte count was under 10,400 in four cases and over 22,000 in the other two. The spinal fluid cell count was under 1,000 in all, with 60 per cent to 100 per cent polymorphonuclear cells. The globulin was elevated in only two cases, and the spinal fluid sugar exceeded 40 mg. per 100 cc. in all, and was normal in four cases. No organisms were found on spinal fluid smear or culture.

All received penicillin and sulfadiazine and all were afebrile in one to six days. The illness was of lesser severity than in those groups previously discussed and there were no complications or sequelae.

DISCUSSION

An increase in the number of cases of "unclassified" meningitis was noted after penicillin first became freely available in 1946. It can be assumed that in many instances this was due to the rapid sterilization of the spinal fluid which limited the laboratory to one specimen of diagnostic value.

Accepted treatment schedules^{1,8,9} for the several bacterial meningitides are perhaps not as rigid as in the days when serum was used exclusively in the pneumococcal, meningococcal and influenzal infec-

tions. Nevertheless, uncertainty in the presence of the symptoms of meningitis usually results in the use of some combination of penicillin, the sulfonamides and streptomycin at great cost and some risk, but may, contrariwise, lead to dangerously small doses and ineffective treatment.

Most reviews of the bacterial meningitis problem^{3,5,9} indicate a much higher proportion of meningococcal infections than was found in this series. Table 4 indicates that at the Cook County Hospital between 1943 and 1945, 74 per cent of the cases of bacterial meningitis were due to the meningococcus, while at the San Bernardino County Charity Hospital between 1940 and 1945 only 40 per cent were due to the meningococcus and between 1945 and 1948 only 17 per cent were due to this organism.

From the standpoint of meningeal diseases as a whole, including both the virus and the bacterial infections, the incidence, or, to put it another way, the odds for a given diagnosis faced by the clinician and the laboratory are indicated by the following data concerning the 144 patients with meningeal signs observed at the San Bernardino County Charity Hospital since 1945:

1. 51 per cent had clinical and laboratory findings consistent with a diagnosis of a virus infection. The risk and expense of antibiotic therapy were to be avoided.

2. 9 per cent had proved tuberculous meningitis, but because early conclusive proof of diagnosis was lacking, seven of these 15 patients received penicillin.

3. 8 per cent had proved *H. influenzae* meningitis which required early specialized treatment with streptomycin and/or serum.

4. 4 per cent had proved pneumococcal meningitis, which in spite of energetic antibiotic therapy is notorious for complications necessitating surgical treatment.^{4,10}

5. 8 per cent had proved meningococcal meningitis which could be expected to respond ideally to sulfonamides alone⁸ without the added cost and risk of penicillin.

6. 15 per cent had unclassified meningitis. Antibiotics were used empirically at considerable expense and some risk.

The assumption that all fulminant bacteremic cases of meningitis of unproved cause were due to the meningococcus^{3,9} would, in our series, have been unsound from the epidemiological standpoint and confusing in the evaluation of therapy. Of nine patients who had purpura, six had a proved meningococcus infection, one had a proved *H. influenzae* infection and in two the infecting agent was unclassified.

No outstanding clinical or laboratory characteristics served to distinguish one type of meningitis from another, yet the diagnostic accuracy was surprisingly good. In no case in which the patient was diagnosed and treated as having a virus infection did bacterial meningitis develop. In the entire group of 70 patients discharged with a diagnosis of bacterial meningitis, the presence of a purulent spinal fluid

was demonstrated on entry in 69; meningeal signs developed in one patient on the third hospital day and the diagnosis was then established.

Autopsies were done in 17 (74 per cent) of the 23 cases of fatal bacterial meningitis. A diagnosis of tuberculous meningitis rested on pathological sections alone in four of ten cases in which autopsy was done. In two cases, postmortem examination of the embalmed body afforded no better diagnosis than "purulent leptomeningitis."

The management of the bacterial meningitides in this series was generally found to have followed standard practices. Penicillin was used more frequently and in larger doses than has been recommended.^{6,8,9} Sulfadiazine administered intravenously was given less frequently on admission than the described condition of the patient would seem to require, and the amount given was usually small.

Repeated spinal fluid examinations were the rule. They were more often done as a guide to therapy or to relieve signs of increased pressure than because of any theories regarding drainage.

Penicillin was given intrathecally to 23 patients without any striking results. Current practice⁶ in San Bernardino County Charity Hospital limits use of the drug to pneumococcal, streptococcal and staphylococcal meningitis. There is at present a divergence of opinion among the staff members as to the place of intrathecal treatment in meningitis, and this accounts for the various treatment programs here recorded. Apparently the views of Hoyne⁸ are gaining ground. It is anticipated that intrathecal penicillin and streptomycin will be abandoned as was the intrathecal use of serum and the sulfonamides.

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The Pathology of the Nodular Goiter

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SUMMARY

Pathologic studies of thyroid nodules indicate that a definite percentage of nodular goiters are malignant, and that an even higher percentage are true neoplasms. Malignant tumors may arise from adenomas, involutionary nodules or possibly from nodules of the unclassified type. Some carcinomas of the thyroid gland are undoubtedly malignant processes from the start. Because of the high incidence of neoplasms, benign and malignant, in a group of single nodules of the thyroid gland, the presence of such nodules should warrant radical resections of the involved lobe and adjacent isthmus. The high incidence of epithelial growth activity in nodular involutionary goiters may revise the accepted practice of removing non-toxic nodular goiters only when clinical evidence of growth or local pressure is present.

pathologic processes. The epithelium of the original alveoli forming the nodule frequently proliferates so that the individual alveoli may become larger, or this growth may be associated with considerable papillary infolding of the acinar lining cells. The storage of increasing amounts of colloid in these large acini plays a considerable part in enlargement of these involutionary nodules. There is often considerable epithelial proliferation between the larger original alveoli, and generally this occurs near the central portion of the nodule. This proliferating epithelium tends to form small fetal-size acini which in time differentiate to form larger acini which approach the normal in size.

This epithelial growth takes place in two ways. The original acini appear to form external buds which become pinched off to form additional small acini. At times the proliferating epithelium grows as long solid cords which later segment, develop lumens and thus form rows of new small aveoli. This secondary epithelial proliferation in an involutionary nodule may be one source of an epithelial neoplasm in the thyroid gland.²

Involutionary nodules often increase in size because of hemorrhage within them. Fibrosis and calcification, the result of hemorrhage or degenerative changes, are not infrequently seen in involutionary nodules. Often the alveolar walls between the large acini degenerate, probably due to vascular compression. In this way, large colloid-filled cysts are often formed. As the nodule enlarges, the veins in the capsule draining the nodule become compressed. Increased venous pressure within the nodule leads then to escape of fluid into the supporting connective tissue. This edema separates both large and small acini and contributes further to the enlargement of the involutionary nodule. Generally, involutionary nodules are multiple, but they may occur singly as well.^{1, 4} Involutionary nodules generally show a high colloid content, but in gross appearance they vary considerably, depending upon the extent of the secondary processes.

Epithelial neoplasms of the thyroid gland have been classified by Warren.⁵ The adenomas or benign epithelial tumors of the thyroid gland have been placed into four groups: embryonal, fetal, simple and colloid. This classification depends upon the presence and size of alveoli formed in the neoplasm. Thus the embryonal adenoma is composed of sheets of epithelial cells without alveolar differentiation. The fetal adenomas are composed of small fetal-sized acini, at times containing colloid. The simple adenoma consists of acini approaching the normal in size, and colloid adenomas consist of large acini which are well-filled with colloid. In Warren's⁵ experience each type of adenoma presented a uniform histologic pattern. In the pathologic material from

A VARIETY of pathologic processes in the thyroid gland may produce nodular enlargement or goiter. In studies of three series of patients with nodular goiter,^{1, 2, 4} a classification of these nodules was proposed. Nodular goiters fall into four general groups: (a) involutionary nodules, (b) neoplasms, benign and malignant, (c) unclassified nodules, (d) miscellaneous nodules, including cysts and thyroiditis nodules.

As has been shown by Reinhoff and Lewis,³ involutionary nodules originate as focal areas of hyperinvolution in a hyperplastic gland. Usually this hyperplasia is not associated with hyperthyroidism. It is cyclic and seems to be associated with demands upon the thyroid gland for thyroid hormone, especially in the female during pregnancy, lactation and the menopause. In the beginning, these involutionary nodules are small. They are composed of enlarged alveoli which are filled with colloid. As they enlarge further, they compress the surrounding thyroid glandular tissue, cause atrophy of its epithelial elements and compress the supporting stroma so as to produce a fibrous capsule. These nodules generally are called adenomas, but since they have their origin in an irregular hyperinvolutionary process, they should not be considered as true neoplasms.

Once the involutionary nodule forms, it may enlarge greatly over a period of years by a number of

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the thyroid clinic at the University of California Hospital, adenomas almost always had a variable histologic pattern in which the tissue near the center of the nodule was more differentiated than that of the periphery. Presumably the most recent growth took place at the periphery. As the tissue became older it underwent acinar differentiation nearer the central portions of the nodule. No colloid adenomas were found and it was felt that such nodules were probably involutionary in origin.

Adenomas are characterized by uniform cells and nuclei. The nuclear chromatin content is not abnormal and mitoses are not numerous. In some nodules the cells had abundant eosinophilic cytoplasm, and these were considered to be Hurthle cells. Adenomas are circumscribed and encapsulated. They usually have an ovoid outline and have a distinct capsule. The adjacent glandular tissue is compressed and atrophic. The cut surface of the adenoma bulges and has a characteristic pinkish-tan color and is glistening, moist and homogeneous. Hemorrhagic changes and edema are not infrequently seen.

Nodules classified as invasive adenomas have the cellular pattern of a benign glandular neoplasm. The tissue of these nodules, however, infiltrates the adjacent gland. Occasionally there is some histologic evidence of capsular restraint. Since the usual cellular criteria of malignancy are absent, these nodules are not classified as carcinoma, although they are locally invasive.

Some thyroid neoplasms classified as malignant adenomas present the histologic criteria of malignancy including nuclear hyperchromatism, pleomorphism and abundant mitoses. These nodules show no demonstrable invasion and are contained within an intact capsule. In gross appearance they do not differ from adenoma.

Carcinoma of the thyroid gland may arise in a previously benign adenoma or may originate in an involutionary or unclassified nodule. On the other hand some carcinomas of the thyroid gland appear to originate as a malignant process. Often the neoplasm is so extensive when examined pathologically that its origin cannot be accurately determined. The gross appearance of the carcinomatous nodule varies with its neoplastic pattern. The more differentiated carcinomas, especially those arising in preexisting involutionary or neoplastic nodules, tend to resemble closely the nodular processes from which they arose. Carcinomas, however, grossly differ from the benign tumors in that the tissue is usually more variegated, and necrotic, fibrotic and hemorrhagic changes are often present.

The wide variety of histologic patterns and the degree of differentiation of malignant thyroid tumors is the basis of the classification proposed by Warren.⁵ Group I includes carcinomas which are well differentiated and in which widespread neoplastic extension has not occurred. Group II contains more rapidly growing thyroid neoplasms which are considered to be of moderate malignancy. Group III includes the anaplastic, rapidly growing thyroid carcinomas. It has been shown that patients with

tumors of this classification have a relatively short survival period.²

It should be noted that some thyroid carcinomas are surprisingly small. They may measure less than 0.5 cm. in diameter and may not be palpable in the thyroid gland. These small primary neoplasms may give rise to bulky metastatic masses in the cervical lymph nodes, skeleton or other tissues. Some patients with thyroid carcinomas, particularly of the papillary type, have a long survival period even with pulmonary, lymphatic or skeletal metastases.²

In pathologic studies of nodular goiter in two series of patients^{1, 4} it was found that certain nodules could not be accurately classified as to an involutionary or neoplastic origin. These nodules were placed in an unclassified group, as has been noted. Involutionary nodules often are characterized by considerable secondary proliferation of small acinar structures, generally near the central portion of the nodule. On the other hand, adenomas usually show acinar differentiation with formation of larger acini toward the center of the nodule. In both instances, however, the location of this secondary proliferation in the involutionary nodule or the acinar differentiation in the adenoma may be variable. Thus in some glands the secondary proliferative or differentiating processes are widespread, and the origin of the nodule becomes obscure. It is important to point out, however, that these unclassified nodules are present for a shorter time before producing symptoms than any other nodules except carcinomas.⁴ They produce a history of relatively rapid growth, and therefore should be considered as possible precursors of malignancy.

Miscellaneous nodules of the thyroid gland include cysts, intracystic papillomas and nodular masses of tissue presenting the characteristics of chronic thyroiditis. Most cysts probably are of involutionary origin, but occasionally no viable tissue can be found within the capsule, and the origin cannot be determined. Intracystic papillomas are rare. There are indications that some of these may be of involutionary origin, and furthermore that there may be a relationship between them and papillary neoplasms of the thyroid. Generally the nodules seen in glands showing chronic thyroiditis are either definitely involutionary or neoplastic in origin. Occasionally the nodules have the same histologic pattern as the adjacent gland.

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Therapeutic Problems of Non-Toxic Nodular Goiter

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SUMMARY

The crucial point regarding non-toxic nodular goiter is the early diagnosis of neoplasm. A neoplasm may be suspected if a nodular goiter has shown recent growth with the concurrent appearance of pressure symptoms, if it is found in a patient under the age of 20, if vocal cord paralysis is present, or emphatically, if a solitary nodule is discovered. Such non-toxic nodular goiters should be promptly removed regardless of the presence or absence of pressure symptoms. If significant pressure symptoms are present, this in itself is an adequate reason for thyroidectomy.

THE purpose of this presentation is to define and evaluate the significant facts obtained by clinical examination and laboratory tests, which aid in arriving at a precise diagnosis of non-toxic goiter harboring involutionary or neoplastic nodules and to a lesser degree nodules associated with thyroiditis.

Involutionary nodules are formed in the thyroid by a cyclic hyperplasia and involution, especially if a relative lack of iodine is present. The need for iodine seems enhanced by the menarche, pregnancy, the menopause, some infections, certain drugs, and, as Astwood² has demonstrated, various vegetables, such as rutabagas. These involutionary nodules, which are in no sense neoplasms, occur approximately seven times as frequently among women as men, are rare under the age of 20, and may grow or degenerate in various ways. Patients with this type of goiter usually have resided in endemic areas and quite frequently give a history of goiter in other family members (Table 1). In involutionary goiters there are usually multiple nodules, and their usual firm consistency may be altered by hemorrhagic or calcific degeneration, or cyst formation within a nodule.

Although non-toxic nodular goiters occur more frequently in females than males, they are more likely to be neoplastic in males than in females. Ward⁸ reported malignancy in a ratio of one case in 44 among females, one in 17 among males.

Unlike involutionary nodules, neoplastic nodules are far from rare under the age of 20. A family his-

tory of goiter and residence in an endemic area are somewhat less frequent among patients with neoplastic nodules than among those in whom the nodules are of involutionary type. Neoplastic goiters, on the average, are present a shorter period before discovery than involutionary goiters. However, a goiter which has been present several years may be malignant, since some tumors are exceedingly slow-growing, and carcinoma may develop in a long-standing involutionary goiter.

The nodules, or apparent nodules, associated with thyroiditis may occur at any age. Pain and tenderness are often present in the nodule. New nodules may rapidly appear as the inflammatory process extends to other areas of the gland, while the older nodules may recede in size concurrently with a pronounced decrease in local tenderness.

The symptoms associated with non-toxic nodular goiters, exclusive of thyroiditis, are due to pressure upon or displacement of neighboring structures. In order of commonness they are: local sense of fullness, dysphagia, dyspnea, hoarseness, and cough. Such symptoms may be absent if a nodule is small or is situated in the upper pole of the gland.

Distinctions between the types of pressure symptoms are of no aid in the differential diagnosis of non-toxic nodular goiter. It has often been stated that hoarseness is highly suggestive of neoplastic goiter. However, in the author's experience, an equal number (essentially one-quarter) of both carcinomatous and involutionary goiters are associated with hoarseness. But, among patients who had hoarseness, recurrent laryngeal palsy was present in three-fourths of those with malignant goiters and only in one-tenth of those having the involutionary type. Tracheal compression and displacement are the usual causes of the hoarseness associated with involutionary goiters.

Involutionary goiters may enlarge due to cyst formation, proliferation of the acinar elements, or degenerative changes, but a history of recent growth

TABLE 1.—Data on Age and Sex Incidence of Various Types of Goiter and Incidence of Salient Facts in Histories of Patients.

	Type of Goiter		
	Benign	Adenoma	Carcinoma
Total cases.....	72	18	90
Sex:			
Male	7(10%)	2(11%)	16(18%)
Female	65(90%)	16(89%)	74(82%)
Cases under age 20.....	0	3(17%)	17(19%)
Residence in Endemic			
Area	56(77%)	14(77%)	26(29%)
Family History of Goiter	34(47%)	10(55%)	10(11%)
Growth	31(43%)	12(66%)	45(50%)

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is suggestive of neoplasm. Enlargement is all the more noteworthy if associated with the concurrent appearance of pressure symptoms.

The consistency of the goiter to palpation is of only moderate importance in differential diagnosis, for involutionary goiters may be quite firm due to degenerative changes, while the neoplastic thyroid may be relatively soft and rubbery. Fibrotic thyroiditis may cause pronounced hardness in the gland. Certainly the traditional description of "stony" is not appropriate for the majority of malignant goiters. The discovery of a solitary nodule is one of the most important findings, for, regardless of all other factors, fully 11 per cent will be carcinoma and an additional 21 per cent will be benign neoplasms.⁷ Enlargement of anterior cervical or supraclavicular nodes suggests that a goiter harbors a carcinoma. Unequivocal fixation of a goiter is likewise strong evidence of malignancy. Lastly, on physical examination tracheal deviation and subclavicular or sternal extension should be recognized. These abnormalities, of course, may occur in any type of goiter.

Appropriate laboratory procedures include an x-ray film of the chest with a swallow of barium. Thereby the size and extent of the goiter may be established more precisely, calcification within it identified, esophageal and tracheal encroachment recognized, and pulmonary metastases discovered. There are certain tests that not only aid in demonstrating hypothyroidism and in ruling out toxicity, but also serve as a guide to postoperative substitution therapy. These include determinations of the basal metabolic rate, of the plasma cholesterol, of the blood iodine level (protein-bound fraction), and, less frequently, of oral galactose tolerance.¹ If dyspnea is present due to tracheal compression by the goiter, spurious levels of the basal metabolic rate will be obtained. If the evidence regarding the presence of toxicity is yet ambiguous, determination of the thyroid uptake of radioactive iodine may be of distinct assistance.⁴

The surgical techniques for thyroidectomy are clearly established, but mere enucleation of solitary nodules is reprehensible because of the incidence of neoplasms among them. In such instances the ipsilateral lobe should be totally removed. In case of self-evident malignancy total thyroidectomy should be performed, together with dissection of the cervical nodes if they are involved. In the case of involutionary goiters it is desirable to attempt to leave at least 3 to 5 grams of thyroid in situ and the patient should be advised to use iodized salt.

If recurrence occurs in carcinoma of the thyroid, reoperation should be done for the relief of specific pressure symptoms, radiation being reserved for cases of clearly inoperable tumors. In cases in which

it has been determined that a carcinoma will take up a significant amount of radioactive iodine, this agent may be used in the therapy of inoperable tumors or metastases from them. There has not yet been full appraisal of this method. Unfortunately, the author's own experience and that of others^{5,6} has been that in only somewhat over 10 per cent of thyroid carcinomas can it be demonstrated that the tumor tissue itself will take up radioactive iodine in effective amount.

In experienced hands the surgical mortality in non-toxic nodular goiter is in the neighborhood of 0.5 per cent, persistent postoperative parathyroid tetany occurs in less than 0.5 per cent of cases, and vocal cord paralysis (in non-malignant goiters) in 0.5-2.0 per cent of cases. The frequency of post-operative hypothyroidism varies from 3.0 to 15.0 per cent.

The prognosis for patients with malignant goiter is determined largely by the extent of the disease and by the cellular pattern of the tumor. Rapidly growing highly anaplastic carcinomas may cause death from respiratory obstruction in a few months. For patients with more differentiated tumors the prognosis is far better. In this clinic, the average survival period postoperatively of patients with carcinoma of histologic grades I and II has been 49.3 and 38.4 months, respectively. These figures present an overly pessimistic picture, however, since in computing the averages the records of some patients who are still living were included. The survival period for patients with anaplastic grade III carcinomas, on the other hand, has been only 14.2 months. However, since many patients tolerate remote metastases for several years, radical extirpation of the primary tumor should be attempted even in the face of metastasis.³

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Hyperparathyroidism

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SUMMARY

Because of the variable and vague clinical symptoms of the disease, diagnosis of hyperparathyroidism may be missed or delayed.

Presenting symptoms and findings may be localized to the urological system or to the skeletal framework, with indications of abnormal blood calcium levels.

In any case in which the patient's only complaints are malaise, lassitude, or progressive weakness, and in which routine laboratory findings are inconclusive, the blood calcium level should be determined.

While not in itself diagnostic, a high level of calcium in the blood will lead to further investigation such as skeletal x-ray studies and blood phosphorus and serum alkaline phosphatase determinations.

Vigilance postoperatively to forestall tetany is of great importance.

of study of x-ray films made for other reasons. The roentgen signs of the disease in the skeletal system are: Generalized decalcification and demineralization of the bones; cysts or giant-cell tumors, or a combination of both; multiple renal calculi, or calcific deposits in joints, in bursae, or in the glands such as the parotid or prostate.

There exists no characteristic localization within the osseous system and the changes may occur anywhere. It is, indeed, an essential part of the roentgen diagnosis that there is no special localization but that large portions of the skeleton are involved. Usually the bone symptoms are not the only indication of the disease. There is almost invariably lassitude and weakness. Vague gastrointestinal manifestations are common. After some time, urogenital symptoms are likely to appear.

CASE REPORT

A boy of 19 complained of pain in the right knee joint after a fall. He also complained of constant, low grade pain in the posterior thoracic region and in the fingers and wrists. He insisted that he was smaller in stature, by one inch, than he had been a year before. Muscular weakness, listlessness, and general apathy were admitted.

A year previously the patient had been in a hospital for two weeks with gross hematuria which was diagnosed as caused by "contusion of the kidney."

The patient was apparently underweight, and there was definite facial pallor. He was unable to elevate the full weight of the body on the balls of his feet, because of general weakness in extremities. A mass, of almond size and shape, could be palpated in the left parotid gland. The thyroid gland was palpable, and an ill-defined mass approximately 1 cm. in diameter was felt in the region of the left lobe. Examination of the heart and lungs revealed no abnormalities. There was slight kyphosis in the lumbar region. Tenderness was noted over the region of the ninth and tenth dorsal vertebrae. The fingers were enlarged in the region of all the interphalangeal joints and there was pronounced tenderness in both hands when gripped. Neurological examination revealed no abnormalities.

There was definite evidence of excessive calcium in the urine as determined by the Sulkowitch test. Result of a Kahn test for syphilis was negative. Serum phosphorus determinations on three occasions were as follows: 2.9 mg., 3.2 mg. and 3 mg. per 100 cc. of serum (normal is 3.7 mg.); and the serum acid phosphatase content was 2.3, 2.2 and 2.3 King-Armstrong units per 100 cc. (normal is 3 units). Serum calcium content on two occasions was 20 mg. per 100 cc. and on another, 19 mg.

X-ray films of the long bones, cranium, vertebrae, abdomen and parotid gland showed remarkable demineralization and decalcification of all the bones, with compression fractures of the 2nd, 3rd, and 4th lumbar vertebrae. There were calcium deposits in the parotid gland and in the trochanteric bursae, and multiple calculi in both kidneys.

At operation through a Kocher incision, a tumor mass at the lower pole of the left lobe of the thyroid gland was encountered and was easily removed. It was walnut brown,

IN 1891 Von Recklinghausen described the disease of bone known as osteitis fibrosa cystica, but not until 1915 did Schlogenhauer note the coincidence of that disease and tumors of the parathyroid glands. In 1926, Mandl of Vienna first explored the neck of a patient with osteitis fibrosa cystica, removed a tumor, and effected a cure.

The forces which mobilize the skeletal calcium usually begin as the result of increased pathological production of parathormone in a parathyroid tumor. The classical case of hyperparathyroidism, then, is associated with an isolated adenoma or adenomas, but the disease may be the result of parathyroid hyperplasia. It has been generally confirmed by experience all over the world that Von Recklinghausen's disease is caused by primary hyperparathyroidism, which means that in the vast majority of cases the existence of one or two parathyroid adenomas or diffuse hyperplasia of the entire parathyroid tissue is the causative factor. However, there is not yet a full understanding as to the types of cases in which adenomas develop or as to when hyperplasia of the parathyroid tissue occurs.

Usually hyperparathyroidism progresses slowly. It is encountered more frequently in women than in men and the incidence is greatest in persons between 30 and 60 years of age. The first symptoms usually occur in the extremities, the pelvis, or spine and consist of pain in these parts. Occasionally the first striking sign of the disease is spontaneous fracture, which may lead to roentgen study and diagnosis. Very often the diagnosis of hyperparathyroidism is made quite accidentally in the course

well encapsulated and measured approximately 3 by 3 cm. in diameter.

The postoperative course was entirely uneventful. Calcium gluconate was given intravenously, although no symptoms of tetany developed. The patient left the hospital on the 7th postoperative day. He was examined frequently for the next 12 months.

From the outset there was clinical evidence of a return to normal calcium balance, with gain in general strength and weight. The patient became robust and cheerful. The urine remained calcium-free after three months postoperatively. The patient grew one inch in height in the first year after operation and an additional three-quarters of an inch in the next two years. He was also 32 pounds heavier.

Roentgen films showed remarkable evidence of remineralization of the bones, especially in the bone cysts. There were still small calculi in both kidneys and in the parotid gland.

The tumor was a benign adenoma. Although there are reports of invasive carcinomas in such circumstances, from a practical point of view malignant tumors do not appear to play an important role in connection with hyperparathyroidism. Usually the tumors found in this association are classified as Grade 1, and there are no reports of recurrences or metastases. Such tumors may be single or multiple. They are yellowish brown, chocolate, or bluish gray



Roentgenogram of right knee taken before operation. Note advanced demineralization and bone cyst formation; also calcific deposits in joints.

in color, and are well encapsulated. They may be large enough to be palpated. Often, however, they may be impalpable because of small size or inaccessible position.

Microscopically the adenoma usually consists of masses or cords of large, water-clear cells which may have a ballooned appearance owing to abundant glycogen content. There may be many oxyphil cells which are present in the normal parathyroid gland. Cases in which malignant parathyroid tumors caused hyperparathyroidism have been reported much less frequently (only seven in the literature) than cases of malignant parathyroid tumors not causing hyperparathyroidism.

The tumor may be embedded in the thyroid gland, or it may be situated in the upper posterior or anterior mediastinum behind the sternum, in the vicinity of the common carotid artery or in the region of the phrenic nerve. Occasionally instead of an adenoma there may be diffuse hyperplasia affecting all four parathyroid glands.

In the late stages of the disease with all the positive laboratory findings of renal involvement and/or x-ray evidence of changes in the bones, the diagnosis of osteitis fibrosa cystica usually is not difficult. However, when the symptoms or complaints are those of hypercalcemia alone, not only may there be diagnostic confusion, but a patient hospitalized with undiagnosed hyperparathyroidism may sometimes become progressively worse and die because of the ill-defined, non-specific character of the presenting symptoms.

As has been said, palpation of a parathyroid tumor is not always possible. Indeed such tumors are palpable in probably not more than 5 to 10 per cent of cases. Moreover, palpitory findings are misleading, and what is thought to be a parathyroid tumor is often actually a lobe of the thyroid gland.

If in the presence of hyperparathyroidism palpation for a mass is negative or undecisive, thorough roentgen examination should precede operation in order to ascertain whether the tumor lies in the anterior or posterior mediastinum and whether there is displacement of the trachea or kinking of the esophagus.

The tumor is easily removed if immediately accessible. It is best encountered through the usual Kocher incision. Thorough search must be made for multiplicity of tumors. If no tumor is found after diligent search, the mediastinum should be investigated. Parathyroid adenomas have been found in this region—sometimes even after a previous operation has been unsuccessful in locating a tumor.

Forestalling postoperative tetany is a matter of great importance. As a rule, after operation for hyperparathyroidism, especially in cases in which there are pronounced pathologic changes in the bones and high serum phosphatase, the originally high content of calcium in the blood drops abruptly, frequently to a level below the level which may induce tetany (7 mg. per 100 cc.). The decalcified skeleton reabsorbs the calcium from the plasma so rapidly that the calcium current, which before the

operation went from skeleton to blood, is reversed. The quantities of calcium that are withdrawn from the blood plasma are so large that hypocalcemia and tetany can result. The cardinal symptom of this process is increased irritability of the peripheral motor nerves so that they are more easily excited by electrical stimulation (Erb's sign), mechanical stimulation (Chvostek's sign) or asphyxia (Trouseau's sign) than are normal nerves. Most patients do not experience convulsions but complain of stiff-

ness in various muscles, especially those of the fingers, legs, face and neck, and of cramps in the extremities. There may be spastic contractions in the fingers and toes and these may be aggravated by temporary circulatory occlusion. Measures to control tetany are: (1) oral or intravenous administration of calcium, (2) administration of vitamin D, (3) administration of A. T. 10 (dihydrotachysterol), and, (4) implantation of parathyroid tissue.

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CASE REPORTS

- ◀ **Aureomycin in the Treatment of Herpes Zoster**
- ◀ **Extraocular Muscle Paralysis from Spinal Injection of Pantopaque**
- ◀ **Foreign Bodies in the Rectum Simulating Anorectal Disease**

Aureomycin in the Treatment of Herpes Zoster

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AUREOMYCIN has been used for a wide spectrum of diseases, but so far as is known, no report has been published of use of the drug in the treatment of herpes zoster. This is the report of a case of that disease in which aureomycin was given with gratifying results.

CASE REPORT

A 55-year-old white female, when first examined on January 3, 1949, had a typical herpetic lesion involving the left face, extending from the lateral border of the mandible to the mid-line of the nose, and from the mid-forehead to the lateral border of the mouth. In the next three days, the patient was given large doses of vitamin B complex, codeine for relief of pain, and twice was vaccinated with smallpox vaccine. The lesion became more severe, with intense burning, and pronounced edema completely closed the left eye. There was evidence of beginning conjunctival ulceration.

On the fourth day, as a measure of desperation, aureomycin was given, 250 gm. every three hours day and night. Within 24 hours subjective and objective improvement was noted. Codeine was stopped and the patient was able to open the left eye to some extent. Forty-eight hours after treatment with aureomycin was started, the conjunctiva had practically cleared, the rash was much improved, and there was very little residual swelling. The dosage was reduced to 250 mg. four times a day and maintained at that level for three more days. By the end of this time the patient was experiencing no symptoms aside from a very mild burning sensation, and the rash had almost completely disappeared. There was no edema. Treatment with aureomycin was discontinued, and vitamin B complex therapy resumed. All signs and symptoms had disappeared by February 2, 1949, with the exception of a slight burning sensation in the region of the temporomandibular joint and slight erythema over the involved area. Later, even these symptoms completely disappeared.

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Extraocular Muscle Paralysis from Spinal Injection of Pantopaque

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PARALYSIS of extraocular muscles occurs in many conditions. It is caused principally by impaired blood supply to the nerves or to their nuclei, or by direct damage to the nerve cells by a toxic agent. Many conditions have been implicated as precipitating factors. Among them are spinal anesthesia,^{1, 2, 3} general anesthesia,² trauma,¹ otogenic disease, intraorbital inflammations, syphilis, multiple sclerosis, meningitis, encephalitis, nephritis, diabetes, neoplasms,⁴ and poliomyelitis.^{5, 6}

From the Moore-White Medical Foundation, Department of Ophthalmology, Los Angeles.

The sixth cranial nerves are peculiarly liable to damage in intracranial disturbances, owing to the sharp bend they take over the border of the petrous ridge, and because the antero-inferior cerebellar and internal auditory arteries cross the nerves at right angles and often lie ventral to them. Parsons⁷ expressed the belief this might account for cases of external rectus palsy following spinal anesthesia. Peter⁸ mentioned a case in which abducens paralysis appeared in a baby soon after withdrawal of spinal fluid.

Levine,⁹ in a review of extraocular muscle palsy occurring after spinal anesthesia, quoted Blanluet and Caron as believing that the palsy was caused by elective toxic action, localized hemorrhage, or mild meningeal infection; Bonnier as believing that the palsy was a reflex from the injected anesthetic fluid reaching the labyrinth and exciting irritation there; Holmes as believing that localized collections of fluid compressed the nerves themselves; and Schmidt-Rimpler as believing that the sixth nerves are most often affected because of their superficial position in relation to the fourth ventricle, the latter communicating through the foramen of Magendie and lateral apertures with the arachnoid space of the cord which carries the anesthetic fluid.

Myelography as a cause of extraocular muscle paralysis is not mentioned in the literature. Use of this procedure with Pantopaque for diagnostic purposes is rather common, especially in diagnosis and localization of injury to intervertebral discs. Pantopaque is a mixture of ethyl esters of isomeric iodophenylundecylic acids in absorbable oil type media of relatively low viscosity. Since it is absorbable, any small residue after its use is said to be readily eliminated.¹¹

Ramsey and Strain¹¹ observed few reactions from use of the material, those being mild aseptic meningeal reaction or transient muscle aching, headache, paresthesia of the lower extremities, or possibly temperature elevation. They stated no complications as a result of Pantopaque myelography had been observed. Copleman⁹ noted no reactions resulting from retention of the material in the subarachnoid space in cases in which complete removal had not been possible. Preacher and Robertson¹⁰ observed one case in which there was benign meningeal reaction following intracranial progression of Pantopaque. Wyatt and Spurling¹¹ observed no toxic reactions following use of the material. Lindblom,⁷ in a summary of complications following myelography with the use of Abrodil or Skiodan (an iodized oil), mentioned no cases of extraocular muscle palsy, though headache, stiff neck, hyperesthesia and shock were fairly common (54 complications in 721 cases). However, Lindblom used novocain spinal anesthesia before introducing the radiopaque oil into the spinal canal.

The following case shows that Pantopaque myelography may be attended by unexpected consequences:

CASE REPORT

A white male patient 37 years of age was treated conservatively throughout 1946 for pain in the left sacro-iliac area and down the left thigh. In August 1947, a myelographic examination was made at a Veterans Administration hospital. Pantopaque was used and 8 to 10 cc. of spinal fluid was withdrawn. Occipital headache and pain in the

back of the neck, which the patient described as "severe," developed. The patient was discharged from the hospital as improved, although no treatment had been given; the pain in the lower back was considered not due to organic disease.

Five days after the myelographic examination, the patient became aware of diplopia and he became dizzy and nauseated. Examination of the eyes showed normal acuity of vision in both. A cover test showed esotropia of 8 diopters at 6 meters and exophoria of 4 diopters at 33 centimeters. A motility test showed the external rectus muscle of the right eye to be paretic. The fundi were normal. A patch was worn over the right eye for two weeks and at the end of that time the acuity of the right eye was 20/25; of the left, 20/25. There was esotropia of 15 diopters at 6 meters and right hypertropia of 4 diopters at the same distance. Three months after onset, diplopia suddenly ceased, and two weeks later all evidence of extraocular muscle weakness disappeared. At that time there was again normal acuity of vision in both eyes, and a cover test showed orthophoria at 6 meters. At 33 centimeters there was exophoria of 6 diopters. Motility was normal. The near point of convergence was at 100 mm.

COMMENT

The symptoms in this case remarkably resembled those of abducens paralysis following spinal anesthesia. The delayed onset, spontaneous recovery and solitary abducens palsy were typical of the circumstances reported for that condition.

SUMMARY

A case of extraocular muscle paralysis following myelography with Pantopaque is reported. Spontaneous recovery occurred with conservative treatment.

511 South Bonnie Brae.

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Foreign Bodies in the Rectum Simulating Anorectal Disease

M. D. REDDING, M.D., San Diego

THE classical symptoms of anorectal disease such as pain, pressure, protrusion, bleeding, and alteration of bowel habit are familiar to all physicians.

These symptoms may also be produced by foreign bodies lodged within the terminal portion of the alimentary canal, thus simulating anorectal disorders more commonly encountered in proctologic practice. According to Bacon¹ there are four routes by which a foreign body may enter the rectum. These are: By ingestion and normal passage to its terminus; through development within the intestinal tract; by entry from a neighboring organ; and finally by insertion through the anus. Obviously, entry through either the upper or lower orifice of the alimentary tract is the most common. Many bizarre foreign bodies have been reported in the literature² and it is not necessary to detail them here.

The following case reports are offered to illustrate the mimicry of anorectal disease by the presence of these objects, to demonstrate the advisability of considering foreign body in the evaluation of proctologic complaints, and lastly to show how readily diagnosis may be made if the patient is examined and not merely given a suppository and a word of reassurance. The presence of a foreign body was suspected in only one of the four cases—Case 4—and then only because of the patient's manner while giving the history.

CASE REPORTS

CASE 1: A 75-year-old white man entered the office complaining of severe anal pain of sharp character aggravated by stool and following stool for the preceding four days. An occasional streak of blood had been noted on the toilet tissue. Inspection of the anal area disclosed no abnormality. The sphincter was tightly contracted. Upon digital examination a sharp, hard object lodged just above the internal sphincter was noted. This was extracted and proved to be a fragment of bone an inch long and one-half inch wide. The patient, who wore dentures, surmised that it had been ingested with lamb stew eaten several days previously. Proctoscopic findings were normal.

CASE 2: A 63-year-old white man reported with the complaint of painful protrusion from the anus of two days' duration which had appeared suddenly after stool and could not be reduced. Usual palliative remedies had afforded no relief. Inspection of the anus revealed a spicule of bone protruding from the orifice. The fragment was removed and found to be a thin lance-shaped bone measuring 1 1/4 by 1/2 inches. The patient, who wore dentures, said that he probably had swallowed the bone while eating ground chicken several days previously. Proctoscopic findings were normal.



Figure 1.—Chicken bone fragment removed from the anus that caused severe pain and bleeding.

CASE 3: A 43-year-old obese white woman weighing well over 300 pounds sought consultation because of progressive constipation of four months' duration and a sense of pressure within the rectum. There was no history of pain, bleeding or protrusion. Inspection and digital examination disclosed no abnormality. Proctoscopy demonstrated a huge fecal impaction high in the rectum. This was removed. Subsequent examination disclosed no abnormality.

CASE 4: A 65-year-old white man was referred by another physician because of sudden change in bowel habit with severe constipation of one week's duration which had persisted despite many laxatives. Inspection of the anus demonstrated no abnormality. Upon introducing the finger a hard movable mass could be felt. With the introduction of a large anoscope a feces-covered stick was visualized with one end impinged against the lowest valve of Houston. A Kocher clamp was inserted, the stick was grasped and elevated and, along with the anoscope, withdrawn from the lower bowel. The stick was a piece of tree branch an inch in diameter and ten inches long, sharpened on one end and blunt at the other. Questioning elicited that one week previously, while drunk, the patient had been induced to insert the stick into his rectum and had not been able to retrieve it. Proctoscopic examination at the time demonstrated severe mucosal ulceration one inch in diameter where the foreign body had lodged against the anterior surface of the rectum. The patient was instructed to return for reexamination, but did not keep his appointment.



Figure 2.—Stick removed from the rectum and sigmoid that produced sudden change in bowel habit.

SUMMARY

Foreign bodies lodged within the rectum may mimic any of the well known symptoms of anorectal disease, but their presence may be readily diagnosed by examination.

Instances of the lodgement of foreign bodies within the terminal part of the alimentary canal by ingestion, formation within the intestinal tract, and by introduction through the anus are presented. Symptoms were indistinguishable from those produced by true anorectal disease.

Elderly wearers of dentures may ingest foreign bodies unknowingly. Both patients who swallowed bone fragments were in this category.

Medico-Dental Building.

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EDITORIALS

Doctors and Lobbies

For many years the medical professional has held itself aloof from the crass business of lobbying legislative bodies. The very word "lobby" has set up a sordid picture in many medical minds and has caused doctors to shy away from the implication that a noble profession should stoop to any endeavor to influence legislation.

On the other hand, Mr. Webster and other lexicographers have long defined a lobby or the practice of lobbying in much more acceptable terms; the American people have long since recognized the practice of attempting to influence legislation as nothing more than the exercise of the privilege of petitioning the government which is specifically set forth in the Bill of Rights.

On August 16, 1949, a showdown on this subject was enacted in the U. S. Senate. It is a pleasure to report that the medical "lobby" won out.

Briefly, the President of the United States offered a plan of reorganization of certain executive departments of the government, in conformity with terms of a law passed by the Congress in 1946 and presumably in furtherance of one section of the Hoover Commission survey and recommendations. The President asked that the several governmental departments of health, education and social security be combined in a Department of Welfare, with its head a member of the Cabinet. (The Hoover Commission had recommended the establishment of a "United Medical Service organization as an independent administration reporting to the President, instead of as a bureau of a department of health, education and security." [Italics by Ed.])

Despite the source of the presidential proposal, and despite the propagandistic appeals of the Committee for the Nation's Health and other well-wishers

that the President's program was following the Hoover Commission recommendations, it was obvious to some members of Congress that the plan was diametrically opposed to what Mr. Hoover and his unbiased commission of citizens had proposed.

The job of medicine, and the job which medicine undertook singlehanded, was to point out to the Senate how widely the President's proposal had missed the mark. In the eyes of the critics, that undertaking was a job of lobbying. (Of course, the propaganda for the President's proposal was not lobbying.)

When the chips were down, when the Senate roll was called, the vote was 60 to 32 against the President's proposal. The medical profession had been able to point out the fundamentals of the presidential scheme to that many Senators—and even to more, although some of them seemed to hold party considerations above other factors in the voting.

Thus ends one aspect of the President's reorganization program. And thus begins, it is to be hoped, the realization of some facts which have long been lurking around the corner, unrecognized by some. First, the authority of the President is not absolute but is subject to the will of the Congress, the elected representatives of the people. Second, that the truth can be made to prevail despite the high position of some who would distort it to their own ends.

Finally, the medical profession must by now have learned of its own strength and authority in the cause of truth and justice, when and if the profession decides to strap on its weapons and go out to do battle. This fight was won by the profession itself.

If this be lobbying, let us have more of it in the cause of sound scientific principles and in behalf of the people of our country.

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NOTICES AND REPORTS

Council Meeting Minutes

Tentative Draft: Minutes of the 364th Meeting of the Council of the California Medical Association at San Francisco, July 9, 1949.

The meeting was called to order by Chairman Sidney J. Shipman at 9:30 a.m., Saturday, July 9, 1949, in Room 210 of the St. Francis Hotel, San Francisco.

Roll Call:

Present were President Kneeshaw, President-elect Cass, Speaker Alesen, Vice-Speaker Charnock, Councilors Shipman, Anderson, Thompson, Green, Crane, Ray, Ball, Lum, MacLean and Frees, Secretary Garland and Editor Wilbur.

Absent (for illness or other cause): Councilors Pollock, Henderson, Montgomery, Bailey and Cherry.

Present by invitation: John Hunton, executive secretary; William P. Wheeler, assistant executive secretary; Howard Hassard, legal counsel; Ed Clancy, field secretary; Ben H. Read, executive secretary of the Public Health League of California; Dr. Edwin L. Bruck, former Councilor; Dr. Dwight H. Murray, chairman of the Committee on Public Policy and Legislation; Dr. John R. Upton, chairman of the Blood Bank Commission; Dr. Henry Gardner, secretary, and E. R. Paolini, auditor, of California Physicians' Service; Ned Burman, of public relations counsel; and county society executive secretaries Frank Kihm of San Francisco, Glenn Gillette of Fresno and Vance Venables of Kern County.

A quorum present and acting. On motion duly made and seconded, it was unanimously voted to send a message of encouragement to Councilor Pollock in his present illness.

1. Minutes for Approval: On motion duly made and seconded, it was voted to approve the drafts of minutes of the 359th to 363rd meetings of the Council, held in Los Angeles from May 7 to May 11, inclusive, 1949.

2. Membership:

(a) A report of membership as of June 30, 1949, was received and ordered filed.

(b) On motion duly made and seconded, 91 members whose 1949 dues had been received since May 11, 1949, were voted reinstatement as active members.

(c) On motion duly made and seconded, one member whose 1948 and 1949 dues had been received since May 11, 1949, was voted reinstatement as an active member for those years.

(d) On motion duly made and seconded in each instance, four applicants were elected to Retired Membership, as follows:

Lucius Belding Phelps, Orange County.
Charles R. Geith, Riverside County.
William A. Reckers, Sacramento County.
Ream S. Leachman, Solano County.

(e) On motion duly made and seconded in each instance, 13 applicants were elected to Affiliate Membership, as follows:

John R. Bryan, San Francisco.
Elizabeth Cuthbertson, San Francisco.
Frederick Kreutzer, San Francisco.
Harvey W. Kring, San Francisco.
Harold Davis, San Francisco.
Marshall J. Fiese, San Francisco.
Fernando Gomez, San Francisco.
Charles Gray, San Francisco.
Elizabeth Kremser, San Francisco.
Barbara Mullen, San Francisco.
Eugene Padel, San Francisco.
S. J. Polk, San Francisco.
Thomas C. Stevenson, San Francisco.

(f) On motion duly made and seconded in each instance, a reduction of dues in the amount of the formula previously adopted by the Council was granted to 12 applicants, as follows:

T. E. Bartholomew, Imperial.
Don S. Dryer, Los Angeles.
Joseph Gaster, Los Angeles.
Margaret Storkan, Los Angeles.
C. F. W. Kohlenberger, Orange.
David C. Tower, San Diego.
George O. French, San Luis Obispo.
Alice M. Lemanski, Santa Clara.
Stanley J. Lourdeaux, Santa Clara.

John M. Mott, Santa Clara.
W. Gordon Smith, Santa Barbara.
Thomas F. Keyes, Yuba-Sutter-Colusa.

(g) On motion duly made and seconded, Dr. Selig B. Weinstein of Alameda County was elected to Associate Membership.

(h) On request of the executive secretary, a ruling was asked on the matter of policy in granting Affiliate Membership to applicants who had completed their regular medical training, had engaged in private practice for a temporary period to obtain funds and had been regular members during that period and had then undertaken additional training as hospital residents in pursuit of specialty certification. On motion duly made and seconded, this question was referred to a special committee named as Dr. Alesen, chairman, and Drs. Frees and Charnock.

3. Financial:

A report of bank balances as of June 30, 1949, was received and ordered filed.

(b) A report of revenues and expenditures for June and for the 12 months ended June 30, 1949, for general funds and for the official journal, was received and ordered filed.

(c) On motion duly made and seconded, extraordinary services of legal counsel for the period ended June 30, 1949, were approved for payment.

4. Councilor Resignation:

The resignation of Dr. Walter S. Cherry as Councilor-at-Large was read and, on motion duly made and seconded, was accepted with regret. This resignation left a Councilor vacancy, to be filled until the time of the next Annual Session. On motion by Ball, seconded by Ray, Dr. Francis E. West of San Diego was unanimously appointed a member of the Council, to serve the portion of the unexpired term of Dr. Cherry until the time of the next Annual Session.

5. State Department of Public Health:

Dr. Malcolm Merrill, Deputy Director of Public Health, discussed the situation in Merced County, where the county hospital application for state and federal funds for a construction addition has been tentatively approved. He quoted from a resolution adopted by the county board of supervisors, which stated that the facilities of the county hospital should be made available to residents of the county unable to pay for services, after social service investigation, or to part-pay patients admitted only where hospital facilities were not available.

Dr. Anderson stated that the records of the county hospital showed that 15 to 25 per cent of all paying patients in the county were admitted to the Merced County Hospital, that the hospital's average cost was about \$14 a day and that collection for such cases was \$7.50 a day to private patients and \$7 a day to patients of insurance carriers under industrial accident classifications. He stated that the installation of a sprinkler system in the Mercy Hospital, Merced, would permit that institution to re-

ceive state approval and to make more approved beds available to the residents.

Mr. Hassard asked Dr. Merrill if the State Department of Public Health had committed itself beyond the point of declining the application of the Merced County Hospital; Dr. Merrill stated that the application had received tentative approval but had not been finally approved for forwarding to the U. S. Public Health Service for approval of federal appropriations.

Mr. Hassard also recommended the advisability of establishment of a reasonable understanding between the Association, the Department of Public Health and the Hospital Advisory Committee of that department, relative to the allocation of available funds and the adoption of policies as between county hospitals, district hospitals and voluntary hospitals. On motion duly made and seconded, it was voted to ask the State Department of Public Health to delay the approval of the application of the Merced County Hospital for construction funds, pending a meeting between state officials and a special committee composed of C. V. Thompson, A. E. Anderson, L. A. Alesen and John Hunton, ex-officio.

(b) Dr. Merrill also reported that changes had been made in the system of issuing permits for sewage disposal, as a result of legislation adopted in the 1949 legislative session; that mass chest film surveys were in the planning stage in Los Angeles and San Diego counties; that a full-time health department had been established in Butte County.

On motion duly made and seconded, it was voted to notify the county medical societies, especially San Francisco and Alameda counties, that application must be made by the county health department, seconded by the county medical society and the county tuberculosis associations, for the establishment of mass chest film surveys.

(c) Dr. Shipman reported that some difficulties had been encountered in the maintenance of the Weimar Sanatorium and the Association was being asked to survey the situation and report to the council of representatives of the 15 counties which jointly operate the institution; on later discussion by Dr. Green, it was regularly moved, seconded and voted to refer this matter to the Committee on Hospitals, Dispensaries and Clinics, with the request that an inspection and report be made, copies to go to the Boards of Supervisors of the 15 participating counties, and that the Council of the Weimar Sanatorium be asked to furnish the Association a copy of the inspection report expected from Dr. Kupka of the State Department of Public Health.

6. Voluntary Health Insurance:

Dr. Frees reported that a group of insurance underwriters had met with committees of the Los Angeles County Medical Association to discuss the possibility of establishing a uniform type of accident and health insurance policy which might be granted a seal of approval by the Association and provide indemnification to policyholders on a fee schedule

which would be promulgated by the Association and recommended to all members as covering full fees for policyholders below a specified income ceiling. During the lunch hour Messrs. Eugene Robison, Lee D. Cranmer, Gilbert Smith and Ralph J. Walker discussed this proposal. It was regularly moved, seconded and voted to refer this proposal to a special committee to consist of Donald D. Lum, chairman, John Ball and Hartzell Ray.

7. Committee Appointments:

(a) On motion duly made and seconded, Dr. William A. Key of San Mateo was appointed to the Committee on Medical Defense, to succeed Dr. Nelson Howard, resigned.

(b) The chairman announced the appointment of Dr. William G. Donald of Alameda County as a member of the Committee on Industrial Health, to succeed Dr. A. B. Carson of Alameda County. This is a special committee, holding office through annual appointment by the Council; Christopher Leggo, Contra Costa County, chairman, and Louis Cheney, Los Angeles, member. The Council confirmed this appointment.

(c) The chairman named, and the Council confirmed, Drs. C. V. Thompson, chairman, A. E. Anderson and L. A. Alesen as members, and Mr. Hunton, ex-officio, a special committee to meet with the State Department of Public Health on matters of mutual interest.

(d) The chairman named, and the Council confirmed, Drs. Wayne Pollock, chairman, E. V. Askey and M. L. Montgomery, members, of a special committee to meet with a similar committee from the osteopathic profession.

(e) The chairman named, and the Council confirmed, Drs. H. Gordon MacLean, chairman, J. W. Green and J. J. Crane, members, of a special committee to consider the functions of other healing art groups. Dr. D. Murray and Messrs. Read and Hassard were named as ex-officio members of this committee.

8. Legal Department:

(a) Mr. Hassard reported that he had prepared an opinion on the employment of salaried physicians by hospitals, following opinions on this subject which had been prepared by the State Attorney General, by counsel for the Association of California Hospitals and by five attorneys selected to prepare comparable opinions by hospitals in this latter association. Mr. Hassard's opinion follows the reasoning of the Attorney General's opinion, to the effect that the employment of salaried physicians by hospitals (other than internships and residencies permitted by law), where the hospital makes a charge for the services of such physician, constitutes a breach of the statutory provisions against the corporate practice of medicine.

(b) Mr. Hassard presented a legal opinion based on an opinion issued by the State Attorney General relative to the inspection of hospital records by rep-

resentatives of the State Department of Public Health. Mr. Hassard's opinion held that the State Director of Public Health does not have legal authority to inspect hospital records of private patients. It was regularly moved, seconded and voted that publicity be given in the official journal to this opinion.

9. Public Policy and Legislation:

Dr. Dwight H. Murray, chairman of the Committee on Public Policy and Legislation, reported on the state legislative session which ended July 2, 1949. Mr. Read, Mr. Clancy and Mr. Hassard augmented this report.

On motion duly made and seconded, it was unanimously voted to send the official thanks of the Council to the members of the Sacramento Society for Medical Improvement for their cooperation with the legislative representatives during the session.

On motion regularly made and seconded, it was voted to go on record in support of a constitutional amendment which will come before the voters of California, to provide annual salaries of \$3,600 for members of the Legislature, to limit the budget sessions of the Legislature to budget considerations only, to limit the number of days on which interim legislative committees might meet, and to limit the number of days of meeting of regular legislative sessions.

On motion duly made and seconded, it was voted to authorize the Executive Committee to define the functions and finances of the special committee on other healing art groups (Item 7(e)).

10. Blood Bank Commission:

Dr. John R. Upton, chairman of the Blood Bank Commission, reported that a new blood bank would start operations in Santa Rosa in September, that a new Valley Blood Bank was now operating in Fresno to serve Fresno, Tulare and Merced counties, that agreement has been reached to establish a bank in Santa Barbara to serve Santa Barbara, San Luis Obispo and Ventura counties, and that the outlook for establishment of a bank in Bakersfield is encouraging.

Dr. Upton placed before the Council several recommendations of the Blood Bank Commission, each of which was regularly moved, seconded and voted for adoption. These were:

(a) That a full-scale bleeding center be set up at the 1950 A.M.A. session in San Francisco.

(b) That the Principles of the American Association of Blood Banks be approved.

(c) That an appropriation of \$5,000 for activities of the Blood Bank Commission be made.

(d) That approval be granted to the appointment of a part-time assistant to the director of the Blood Bank Commission, on the basis of \$500 monthly for full-time work.

(e) That Drs. Thomas F. O'Connell, Jr., of San Diego, Clarence D. Newell of Fresno (to succeed W. L. Adams, Jr., of Fresno) and L. N. Osell of Kern

County be appointed members of the Blood Bank Commission.

Dr. Upton also asked if the Blood Bank Commission might accept contributions made by laymen. The Council approved such acceptance.

11. *Cancer Commission:*

Dr. David A. Wood, secretary of the Cancer Commission, brought before the Council five items approved by the Cancer Commission, on which Council confirmation was sought. These were:

(a) Reappointment of Dr. Frederick R. Hook as Medical Director at a salary of \$12,000 annually, one-half of which would be met by the American Cancer Society, California Division. On motion duly made and seconded, the Council voted approval of this arrangement.

(b) Establishment of a standard \$50 honorarium for speakers in the professional educational campaign. On motion duly made and seconded, this policy was voted approval.

(c) The question of accepting cases referred by practitioners in other professions. On motion duly made and seconded, it was voted to refer this question to the county medical society where such referrals might arise.

(d) The question of approval or disapproval of members of certain other professions on tumor boards. No action was taken.

(e) Establishment of a policy in the American Cancer Society, California Division, that county branches shall not take action on state legislative matters except with the consent of the state office. On motion duly made and seconded, this policy was granted approval.

12. *California Physicians' Service:*

(a) Dr. Donald Laing presented to the Council a suggested procedure for the establishment of radiological and pathological fees to be paid by C.P.S.; the program was prepared by the Pacific Roentgen Society and submitted to the Board of Trustees of C.P.S., which had asked that it be referred to the C.M.A. Council for comment. Its stated objective was to adjust the situation whereby radiological and pathological fees had originally been set on a specialist basis but where by practice an estimated two-thirds of these services in ambulatory radiology are now being performed by non-specialists. The program contained the following suggestions, which were estimated to produce a saving to C.P.S. of \$150,000 to \$200,000 annually:

(1) Revise the C.P.S. radiology and (presumably) pathology schedules to about 50 per cent of their present levels.

(2) When consultation is obtained on these services, by referral of a patient to a radiologist or pathologist, the decreased schedule be applied but a reasonable consultation fee (e.g., the difference between the present and the decreased schedule) be allowed the specialist.

(3) To gauge the value of such special diagnostic services, create a suitable number of reviewing

boards which would audit random samples of radiological and pathological work, to protect the subscribing member and to locate services deemed below a reasonable standard of quality.

(4) Prepare plans for an annual limit on the value of special tests which may be demanded by ambulatory patients, except in cases of major or catastrophic illness, such as diabetes mellitus, proven malignancy, etc.

(5) For purposes of administration of these provisions, a specialist would be considered a physician who has received special training in and preferably certification in his specialty, who limits his practice to that specialty and who accepts none but referred cases.

After discussion, it was regularly moved, seconded and voted to approve this program in principle and refer it back, with this approval, to the C.P.S. Board of Trustees.

(b) Dr. Henry Gardner, secretary of C.P.S., reviewed the actions taken by the Administrative Members at the Annual Session, in election of officers and Trustees and on resolutions considered. He also reported that a new fee schedule has been approved by the Trustees, tentatively effective September 1, 1949. Dr. Gardner stated that review committees are now operating in all parts of the state and that a member of the Board of Trustees is present at each meeting of these committees.

(c) Dr. Cass reported that the joint operating committee of C.P.S. and Blue Cross in Southern California is in active operation and is now looking for a joint operating manager for that area.

(d) Dr. Kneeshaw suggested that the Board of Trustees of C.P.S. plan to meet with the presidents and secretaries of the county medical societies before annual sessions. On motion duly made and seconded, it was voted to recommend to the Trustees of C.P.S. that such meetings be held.

(e) E. R. Paolini distributed a C.P.S. financial report, stated that individual membership contracts would be offered in all counties from Fresno north on August 1, and said that C.P.S. is employing an eastern actuary to study the problem of developing a contract for catastrophic coverage. Beneficiary membership of C.P.S. is now about 780,000, he stated.

13. *Industrial Fees:*

(a) Dr. Cass reported on meetings held with representatives of insurance carriers and on steps subsequently taken. He stated that the joint committees would meet again on July 19 in a further effort to work out a schedule of fees acceptable to both parties.

(b) Dr. Shipman presented the situation raised by the Department of Employment, State of California, in setting fees for examinations of claimants for disability insurance. The Council approved a draft of a letter to the medical director of the department, in which it was pointed out that the Industrial Acci-

dent Commission no longer maintains a fee schedule and in which the department was requested to recognize the schedule prepared by the Association.

14. California Medicine:

(a) Editor Wilbur presented a request received from a medical organization for establishment of specified page each month for news and other items deemed interesting to general practitioners. On motion duly made and seconded, it was voted that the sense of the Council was that no change be made in existing editorial policies.

(b) A request for the naming of representatives of Allergy to the Editorial Board was considered and on motion duly made and seconded, it was voted to appoint Drs. Frank G. Crandall and Samuel H. Hurwitz as members of the Editorial Board.

15. Long Beach Hospitals:

Material was presented relative to the request of hospital interests in Long Beach for the issuance of municipal bonds to provide hospital construction funds, the hospitals to be deeded to the municipality and leased to present operators at a nominal annual rental. On motion duly made and seconded, it was voted to refer this matter to the Committee on Hospitals, Dispensaries and Clinics.

16. Lassen-Plumas-Modoc County Medical Society:

The request of the Lassen-Plumas-Modoc County Medical Society for naming of a referee to conduct hearings on charges of unprofessional conduct brought against a member of the society was considered. It was regularly moved, seconded and voted that Arthur Connolly, Jr., of San Francisco be appointed referee, the Executive Committee to make proper arrangements for his services.

17. New Mexico Physicians' Service:

Mr. Hunton reported that the business of New Mexico Physicians' Service had been contracted for transferral to a commercial insurance company under an agreement which will return a maximum of \$20,000 to the former organization over a period of the next year. It is estimated that \$8,000 to \$10,000 will become available for repayment of a portion of the loan funds advanced by the Association. Mr. Hunton was instructed to request that the Association be kept informed of the progress of this transfer.

18. Medical Society of the State of California:

A progress report on discussions with officers of the Medical Society of the State of California was given by Dr. MacLean and it was regularly moved,

seconded and voted to refer this matter to the Executive Committee for further report from the committee.

19. Interscholastic Federation Protection Fund:

Discussion was held on the request of the Interscholastic Federation Protection Fund for an establishment of a fee schedule to provide services for secondary school athletes injured in school sports. It was regularly moved, seconded and voted to refer this matter to the special insurance committee under the chairmanship of Dr. Lum.

20. Public Relations:

Ned Burman of public relations counsel gave a digest of the progress of the national educational campaign and suggested contact with Congressional representatives when they return to their home districts.

On motion duly made and seconded, it was voted to voice official opposition to HR 2892 and HR 2893, which would extend social security taxes to self-employed persons.

Dr. Frees reported that plans were under consideration for a dinner to be given to business and civic leaders in the Los Angeles and Southern California area, probably in the fall of the year.

21. Memorial to Dr. Ray Lyman Wilbur:

It was regularly moved, seconded and voted to refer to the Executive Committee the matter of establishing a suitable memorial to the late Dr. Ray Lyman Wilbur.

22. Chamber of Commerce of the U. S.—Pamphlets:

It was regularly moved, seconded and voted to secure copies of a pamphlet on health insurance issued by the Chamber of Commerce of the United States and to distribute these to all members.

23. New and Miscellaneous Business:

Several items of miscellaneous business were discussed and ordered referred to the Executive Committee for disposition.

24. Time and Place of Next Meeting:

It was agreed to hold the next meeting in Los Angeles on Saturday, September 24, 1949, to continue the following day if, in the opinion of the chairman, such continuance was indicated.

Adjournment.

SIDNEY J. SHIPMAN, M.D., Chairman
L. HENRY GARLAND, M.D., Secretary

Irwin Memorial Blood Bank

The Nation's First County Medical Society Blood Bank

For over eight years, the Irwin Memorial Blood Bank, founded and operated by the San Francisco County Medical Society, has been providing whole blood and plasma for transfusion therapy. When it was started in 1941, it had four basic aims:

1. To provide whole blood and plasma, at cost, to patients in the area requiring transfusions;
2. To make certain that blood was available for all patients, regardless of ability to pay the service fee or provide donor replacements;
3. To process and distribute plasma to lend-lease nations;
4. To create a plasma reserve for the people of San Francisco.

Today, after eight increasingly useful and successful years, the blood bank is still functioning on the same principles.

In the first year of operation, 7,362 donors gave blood which was used for whole blood transfusions or processed for plasma. With America's entrance into the war, the blood bank made its products available to civilian and military hospitals. Over 6,000 units of blood and plasma were donated to allied armed forces during the war years.

PROCUREMENT AND SERVICE

Today, the picture is very different. Monthly over 3,000 people are applying as donors and the bank is now distributing over 2,500 units of whole blood and processing the remainder as plasma. At present, the blood bank is providing transfusions to patients in some 55 hospitals with a total bed capacity of 10,613. It is the only bank serving San Francisco, Marin and Napa counties, and it supplies part of the needs in the Vallejo area. Requests to supply blood to other areas are being received in increasing numbers.

The blood bank has registered over 155,000 donors; 140,000 units of whole blood have been distributed to patients, and thousands of plasma units processed. The bank now distributes its own irradiated plasma which is available for hospitalized patients for \$10 plus a donor replacement for each unit.

SOURCE OF BLOOD

When blood is supplied to patients in hospitals, a service fee of \$6 is collected at the hospital for each unit. This is the actual cost of drawing, preparing, packaging and transporting the blood from the bank to the hospital, and is the only fee received by the bank. In addition, each unit of blood withdrawn must be replaced to make blood available for other patients. To insure replacements, the hospital charges the recipient a \$25 "professional donor" fee for each unit, making the total charge per transfusion \$31. In order to receive refund of the \$25

professional fee, the blood must be replaced by donors recruited from the patient's family or friends or by a previously established blood credit. If this is not done, the hospital pays a professional donor the regular \$25 fee to make the replacement to the bank. In no case does the blood bank receive the \$25 fee. The bank, hospitals and patients' physicians encourage voluntary donor replacements so that patients may have the advantage of transfusions at the low cost of \$6 each.

One hundred seventy business firms, societies and fraternal organizations have blood reserve funds with the bank. All deposits to a reserve fund are held for a one-year period for the use of the members or their immediate families. The replacement is debited from the fund upon authorization from the reserve chairman of the organization. Funds are kept active by regular blood donations of members.

Individuals may also deposit blood and thereby establish credit for one year which is available for their relatives and friends as replacement for blood provided by the bank.

For the purpose of encouraging voluntary blood donations, the bank operates mobile units to visit fraternal and industrial organizations, Army and Navy installations, and other counties. Fifty such trips have been conducted since the start of the bank in 1941.

THE STAFF—PROFESSIONAL AND VOLUNTEER

A paid professional staff of 30 employees is required to operate the bank. Supplementing this minimum paid staff, a corps of 75 volunteers, many of whom are physicians' wives, deliver blood to hospitals, serve as canteen workers and hostesses. This service represents a saving of \$15,000 a year in salaries, an important consideration for a non-profit organization.

BLOOD BANK RECIPROCITY

Blood banks receive daily requests from individuals to transfer blood credits from one area to another; for example, the inquirer resides in San Francisco, and friends living elsewhere wish to donate to the credit of the recipient. As a convenience to patients requiring blood replacements, Irwin maintains reciprocity with other non-profit community and hospital blood banks in California and several throughout the nation.

MORE BANKS

More non-profit blood banks are necessary in the state. Irwin is actively cooperating with the California Medical Association Blood Bank Commission in the formation of new blood banks for other communities to encourage complete blood coverage for all California.

C.P.S. Now Has Over 10,000 Physician Members

A notable event in the historic growth of California Physicians' Service was recorded during August when physician membership in the pioneer prepaid health plan passed the ten thousand mark.

The achievement represents the second important milestone reached by C.P.S. during the past few months. Earlier this year the organization observed its tenth anniversary.

Commenting on the occasion, W. M. Bowman, C.P.S. executive director, issued the following statement:

"The founding of California Physicians' Service more than a decade ago was an outstanding example of the medical profession's will to make prepaid medical care, on a voluntary basis, available to the public—and thereby assist greatly in the improvement of general health conditions.

"Today's membership of more than 10,000 California physicians in C.P.S. is further convincing evidence that the medical profession can meet and is meeting the need for prepaid medical care. It makes the claims of those who propose government-controlled medicine even more groundless."

He pointed out that C.P.S., founded in 1939 under the leadership of the late Dr. Ray Lyman Wilbur, had an initial physician membership of 5,000. It was the first statewide, medically sponsored health plan in the United States and has been a model for other state plans organized later.

Figures released by Mr. Bowman showed that, from the original 5,000 physician membership, the number of doctors enrolled in C.P.S. increased modestly during the war years, then rose rapidly after the war. The year-by-year figures are:

Year	Physician Members
January, 1940	5,000
January, 1941	5,208
January, 1942	5,300
January, 1943	5,200
January, 1944	5,200
January, 1945	5,400
January, 1946	5,890
January, 1947	8,000
January, 1948	9,000
January, 1949	9,600
August, 1949	10,000



California Medical Association

Proposed New Constitution and By-Laws

The following is the final draft of a proposed revision of the Constitution and By-Laws of the California Medical Association. It was submitted to the 1949 Annual Meeting of the C.M.A. House of Delegates by Sam J. McClelland, M.D., chairman of a committee which was appointed to review a tentative redrafting of the present document. Action on the proposed revised version is scheduled to be taken by the House of Delegates at the Annual Meeting in 1950.

CONSTITUTION

ARTICLE I.—NAME, PURPOSES AND ORGANIZATION

Section 1.—Name

The name of this organization is California Medical Association (hereinafter referred to as the Association).

Section 2.—Purposes

The purposes of this Association are to promote the science and art of medicine, the protection of public health, and the betterment of the medical profession; to promote similar interests of its component societies; and to unite with similar organizations in other states and territories of the United States to form the American Medical Association.

Section 3.—Organization

This Association has two divisions: One, the Association as an organization; and Two, the Scientific Assembly. The Association as an organization includes component societies and their active members, the House of Delegates, Council, Commissions and Standing Committees. The Scientific Assembly includes all members of the Association and the scientific sections.

Section 4.—Definition of Component Societies

Component societies include all county medical societies (which may cover one or more counties) heretofore or hereafter chartered by this Association.

Section 5.—Component Society Charters

Charters to component societies may be granted and revoked as hereinafter prescribed, subject to the limitation that only one charter may be outstanding at any one time in any county.

ARTICLE II.—MEMBERSHIP

Section 1.—Classes of Members

The members of this Association shall consist of Active, Associate, Honorary, Retired, Life and Affiliate members.

Section 2.—Membership Qualifications, Rights, Privileges, Duties and Method of Election

The qualifications, rights, privileges, duties, obligations and methods of election of the several classes of membership are as stated in the By-Laws.

ARTICLE III.—GOVERNMENT OF THE ASSOCIATION

Part A.—House of Delegates

Section 1.—Composition

The House of Delegates shall consist of:

- (a) Delegates elected by the members of component societies;
- (b) Officers of the Association as hereinafter provided; and
- (c) Ex officio, without the right to vote, the District Councilors.

Section 2.—Representation

As the By-Laws shall provide, each component society shall be entitled to proportionate representation in the House of Delegates but with a minimum of one delegate.

Section 3.—Alternates

Alternates shall be elected, as specified in the By-Laws, in the same manner as delegates are elected. One alternate shall be seated in place of each delegate absent or disqualified for failure to attend meetings or other cause.

Section 4.—Terms of Delegates and Alternates

Delegates and alternates shall serve for two or three years as each component society may determine. One-half or one-third, as the case may be, of the allowed number shall be elected each year.

Section 5.—Quorum

A majority of the authorized number of delegates shall constitute a quorum.

Section 6.—Functions of the House of Delegates

The House of Delegates shall be the legislative body of the Association and shall exercise such other functions as the By-Laws may prescribe.

Section 7.—Issuance and Revocation of Charters

(a) The House of Delegates shall issue charters to medical societies of a county or combination of counties deemed eligible and which have made proper application therefor.

(b) The House of Delegates may suspend or revoke any such charter, after due notice and proper hearing, for cause. "Cause" shall be considered to be any conduct or action, on the part of any component society, deemed in contravention of the Constitution

and By-Laws of the Association or the American Medical Association or their "Principles of Medical Ethics." "Cause" shall further be deemed to be any conduct or action of a component society deemed inimical to the best interests of the Association.

(c) It may act on the withdrawal or secession of any component society from the Association and take such measures as are deemed advisable and proper for reinstatement of any component society which may have withdrawn or had its charter suspended or revoked.

(d) A two-thirds affirmative vote of the delegates present and voting shall be necessary for any action under the provisions of this section.

Section 8.—Sessions of the House of Delegates

In each year there shall be one or more sessions of the House of Delegates as fixed in the By-Laws. Special sessions may be called and held as provided in the By-Laws.

Part B.—Council

Section 9.—Composition

The Council shall consist of:

(a) One Councilor, elected from each district; and

(b) The President, President-Elect, Speaker and Vice-Speaker.

In addition, the Secretary-Treasurer and Editor, ex officio but without the right to vote.

Section 10.—Councilor Districts

There are twelve councilor districts as follows:

District Number One, comprising San Diego County.

District Number Two, comprising Imperial, Orange, Riverside, San Bernardino, Mono and Inyo counties.

District Number Three, comprising that area included in the 1937 city limits of the City of Los Angeles and known as Councilor District 1(g) of the Los Angeles County Medical Association. (If the By-Laws of the Los Angeles County Medical Association are hereafter amended to change the reference therein to the 1937 city limits of the City of Los Angeles to another date, such other date shall automatically be incorporated in this By-Law in lieu of the year 1937.)

District Number Four, comprising the County of Los Angeles except the area included in District Number Three above.

District Number Five, comprising Ventura, Santa Barbara and San Luis Obispo counties.

District Number Six, comprising Kern, Kings, Tulare, Fresno, Madera, Merced and Mariposa counties.

District Number Seven, comprising Monterey, San Benito, Santa Cruz, Santa Clara and San Mateo counties.

District Number Eight, comprising San Francisco County.

District Number Nine, comprising Alameda County.

District Number Ten, comprising Stanislaus, Contra Costa, San Joaquin, Calaveras, Tuolumne, Amador and Alpine counties.

District Number Eleven, comprising Marin, Solano, Napa, Sonoma, Lake, Mendocino, Humboldt and Del Norte counties.

District Number Twelve, comprising Sacramento, Eldorado, Placer, Nevada, Sierra, Yuba, Sutter, Yolo, Colusa, Glenn, Butte, Plumas, Tehama, Trinity, Shasta, Lassen, Modoc and Siskiyou counties.

Section 11.—Election of Councilors

Councilors shall be elected by vote of the delegates from each district in the manner and at the time specified in the By-Laws.

Section 12.—Councilors: Terms of Office

Councilors shall serve for terms of three (3) years; one-third to be elected in each year.

Section 13.—Council: Powers and Duties

Subject to the provisions of this Constitution, and all resolutions and enactments of the House of Delegates, the Council shall be vested with full and complete power and authority to manage, control, use, invest, reinvest, lease, make contracts in respect of, and concerning, convey, give, grant, transfer or otherwise dispose of all property and assets of whatever kind or nature owned by the Association, and shall also be vested with full and complete power and authority to do and perform all acts and to transact all business for and on behalf of the Association and to manage and conduct all the work and activities of the Association in carrying out the purposes thereof. The Council shall have such additional duties, powers and functions as are prescribed in the By-Laws.

Section 14.—Election of Councilors on Adoption of this Constitution

Upon the adoption of this Constitution, the delegates from each district shall proceed to elect Councilors as follows: At the annual meeting at which this Constitution is adopted, the Councilors of the First, Fourth, Seventh, and Tenth Districts shall be elected for terms of one year each; Councilors of the Second, Fifth, Eighth, and Eleventh Districts shall be elected for terms of two years each; and Councilors of the Third, Sixth, Ninth, and Twelfth Districts shall be elected for terms of three years each. Thereafter, as each term expires, the delegates from the districts shall elect a Councilor to serve for a term of three years.

Upon the adoption of this Constitution and the election of twelve district Councilors, as above provided, the terms of office of the Councilors elected prior to the adoption of this Constitution shall immediately cease and terminate.

ARTICLE IV.—FUNDS, PROPERTY, DUES, ASSESSMENTS AND EXPENDITURES

Section 1.—Annual Dues

At each regular session the House of Delegates shall, by a majority vote, fix the annual dues to be

paid by members of the Association for the ensuing calendar year. Dues payable by active members shall be uniform and equal, except that the House of Delegates may reduce dues for certain groups (by general classification) as the By-Laws may expressly permit.

Dues payable by associate members shall be uniform and equal but may be set at not less than one half the regular dues for active members.

Section 2.—Military Service

During any period at which the United States is at war or requires services of doctors of medicine under an universal military training or draft program, annual dues may be reduced or waived by the House of Delegates with respect to those members serving in the Armed Forces of the United States during the whole or any part of any year.

Section 3.—Leaves of Absence

The Council, on recommendation of a component society, may grant leaves of absence to active members who are seriously ill and cannot practice or who leave practice temporarily for postgraduate study or other purposes acceptable to the component society and the Council and during such leave a uniform reduction of dues shall be established by the Council; provided no leave may exceed one year but shall be subject to renewal.

Section 4.—Special Assessments, etc.

Funds may also be raised by any of the following methods: (a) publications of the Association; (b) voluntary contributions; (c) bequests, legacies, devises, and gifts; (d) special assessments levied by the House of Delegates; and (e) in any other manner approved by the House of Delegates. In the event that the House of Delegates levies any special or other assessment than the annual assessment of dues, it may, in the resolution levying the assessment, fix and determine the time within which such assessment must be paid, the class or classes of members of the Association upon whom it is levied, and the penalty, if any, including forfeiture or suspension of membership in this Association or the component society, or both, to result from nonpayment thereof within the time prescribed.

Section 5.—Annual Budget and Expenditures

At each regular session of the House of Delegates, the Council shall submit to it an itemized budget stating the proposed expenditures of the Association for the ensuing year. The budget may be altered or revised by the House of Delegates, but must be adopted by the House before adjournment of the session. After its adoption, no expenditures in excess of the amount of the budget item covering the subject of such expenditures may be made in the year covered by the budget by the Association or any of its officers, agents or employees, unless the Council by a three-fourths vote of all voting members shall first approve such excess expenditure by resolution duly adopted. Recurring items in the budget

(fixed expenditures covering more than one year) shall, when first adopted, be binding as to subsequent budgets to the extent of commitments or obligations entered into by the Association within authority granted by the House of Delegates or this Constitution or the By-Laws.

Section 6.—Benevolence Fund

At least \$1.00 out of the annual dues paid by each active member of the Association shall be allocated to the Physicians' Benevolence Fund and shall only be used for the purposes as set forth in the By-Laws.

Section 7.—All Funds and Moneys to Be Paid to Secretary-Treasurer and Deposited With Depository

All funds and moneys received for the Association by any officer or agent thereof shall be promptly paid to the Secretary-Treasurer and by him deposited with a depository selected as such by the Council.

All depositaries selected by the Council shall be banks or trust companies duly licensed to transact business as such in the State of California.

Section 8.—Membership Interest in Association Property

No person other than an active member in good standing shall have any interest in the property of the Association and the interest of any active member therein shall cease when he ceases to be a member of the Association.

If any active member shall resign or otherwise cease to be an active member of the Association, all of his interest in and to all property of the Association shall cease and such cessation of membership shall operate as a release and assignment to the Association of all the right, title and interest of such member in and to all the property of the Association.

ARTICLE V.—REFERENDUM AND PETITION

Section 1.—Referendum and Petition

The right of referendum and petition shall be as set forth in the By-Laws.

ARTICLE VI.—OFFICERS

Section 1.—Officers

The officers of this Association shall be a President, a President-Elect, a Secretary-Treasurer, a Speaker of the House of Delegates, a Vice-Speaker of the House of Delegates and an Editor.

Section 2.—Powers and Duties of the President-Elect

The President-Elect shall act for the President in his absence or disability, and if the office of President becomes vacant the President-Elect shall then succeed to the Presidency to serve as President for such unexpired term and for the term of one year thereafter.

ARTICLE VII.—SCIENTIFIC ASSEMBLY

Section 1.—Objects

The Scientific Assembly of the California Medical Association is the convocation of its members for the

presentation and discussion of subjects pertaining to the science and art of medicine.

Section 2.—Sections

The Scientific Assembly shall be divided into sections, each section representing that branch of medicine described in its title.

Section 3.—Creation of New Sections

New sections may be created or existing sections discontinued by the House of Delegates. The Scientific Assembly and its sections shall be conducted in accordance with the provisions of this Constitution and the By-Laws, and such other instructions by the House of Delegates or the Council as may not be in conflict therewith.

ARTICLE VIII.—MISCELLANEOUS

Section 1.—Incorporation

(a) To aid in carrying out the objects of the Association, the House of Delegates at any meeting of any regular or special session thereof may by a two-thirds vote of the members thereof present and acting, authorize, empower and direct the Council to cause the formation and organization of a non-profit corporation under the laws of the State of California, without capital stock, with such incorporators, name, purposes, objects, principal place of business, term, number of directors and directors to serve for the first year and until their successors are elected and have accepted office, and with such provisions regarding the voting power and property rights and interests of the members of the corporation and such further provisions in the Articles of Incorporation thereof, and with By-Laws and composed of such members representing this Association as the Council shall prescribe, fix and determine. The House of Delegates may at its option in connection with the granting and giving of such authority, power and direction to the Council, prescribe, fix and determine any or all of such matters pertaining to the said corporation, its Articles of Incorporation and any provision thereof, By-Laws and membership, and its action thereon shall bind the Council; and the House of Delegates at any meeting of any regular or special session thereof may by a two-thirds vote of the members thereof present and acting, authorize, empower and direct the Council to grant, assign, transfer, convey and deliver, or cause to be granted, assigned, transferred, conveyed and delivered to the said corporation upon the formation thereof without any consideration therefor, any property, real or personal, of the Association, which authorization, power and direction may be given prior or subsequent to the formation and organization of said corporation.

(b) To further aid in carrying out the objects of the Association, the House of Delegates at any meeting at any regular or special session thereof may, by a two-thirds vote of the membership thereof present and acting, authorize, empower and direct the Council to cause the formation and organization of one or more corporations under the laws of the State of California with such incorporators, name, purposes,

county where the principal office for the transaction of business is to be located, first directors, the total number of shares, the aggregate par value, if any, of all shares, classes of shares, par value of any shares having par value, statement of the provisions, privileges and restrictions granted or imposed upon the respective classes of shares, or if the corporation be formed without capital stock the authorized number and qualifications of its voting and other rights of each class of members and the liability of each and all classes, to dues or assessments, and with such further provisions in the articles of incorporation thereof and with such by-laws as the Council shall prescribe, fix and determine; and the House of Delegates at any meeting of any regular or special session thereof may, by a vote of two-thirds of the members thereof present and acting, authorize, empower and direct the Council to grant, assign, transfer, convey or deliver or cause to be granted, assigned, transferred, conveyed or delivered to any of such corporations upon the formation thereof or to applicants for health and accident or other insurance in or from any of said corporations at or prior to the formation thereof without any consideration therefor, such funds and property, real or personal, of this Association as the House of Delegates shall from time to time authorize or ratify.

Section 2.—Seal

The Association shall have an Association seal consisting of a circle having on the circumference the words "California Medical Association, Eureka, 1856," with such further emblems, figures and words as the House of Delegates, on recommendation from the Council, shall prescribe.

The power to change the seal shall rest with the House of Delegates.

Section 3.—Amendments

Any member of the House of Delegates at any meeting of any session, other than a special session, thereof may present an amendment or amendments to any article or articles or any section or sections of any article or articles of this Constitution.

Such proposed amendment or amendments shall be in writing and shall be filed with the Secretary and shall thereafter be published at least twice in separate issues of the official journal of this Association prior to the next session of the House of Delegates.

At the said next session, other than a special session, of the House of Delegates, such proposed amendment or amendments shall be submitted to the House of Delegates, for consideration at any meeting of the House of Delegates during that session, and if two-thirds of the Delegates present and voting vote in favor thereof, the same shall be adopted.

Section 4.—Repeal of All Provisions of Existing Constitution

All articles and all sections and all parts of all articles of the existing Constitution are hereby repealed.

BY-LAWS

CHAPTER I.—COMPONENT SOCIETIES

Section 1.—Component Society Charters

The charter of each component society shall provide that all the provisions of the Constitution and By-Laws of this Association in force at the time of the issuance of such charter, together with all amendments to either thereof thereafter adopted, in so far as the same are applicable, shall be an integral part of the Constitution and By-Laws of the component society to which the charter is issued and that the terms and provisions thereof shall control and govern such component society, the officers and members thereof, and that the constitution and by-laws of the component society shall not be amended in any way to conflict or be inconsistent with the Constitution and By-Laws of this Association. Each charter shall be signed by the President and the Secretary-Treasurer of this Association.

Section 2.—Revocation of Component Society Charters

The charter of any component society may be revoked by the House of Delegates if, after the filing with the Secretary-Treasurer of this Association of a written petition or protest signed either by the Chairman of the Council pursuant to resolution adopted by the Council by the affirmative vote of two-thirds of all the members thereof, and after due notice of hearing and after hearing thereof, the House of Delegates by a two-thirds vote of its members decides that the provisions of the Constitution or By-Laws of this Association or of the charter of such society have been breached by such society or that such society has committed acts or conducted itself in conflict with the Constitution, By-Laws or purposes of this Association to such extent as to make such revocation desirable in the best interests of this Association.

Section 3.—Component Society Sections

(a) *Geographical or Specialty Sections.* A component society may authorize the formation and existence of branch geographical or specialty sections for scientific investigation and work only, and the members of such geographical sections or specialty sections must be members of such component society.

(b) *Members in Sections to Be Members of Respective Component Societies.* No geographical or specialty section shall be permitted to have any classes of members which classes in whole or in part include non-members of the component society of which any such geographical or specialty section is a branch or subdivision; provided that nothing in this section shall be construed as limiting the guest privileges of such non-members at meetings of such section.

Section 4.—Component Societies Exclusive Judges of Qualifications of Applicants for Membership

Each component society shall, subject to the minimum requirements for eligibility as provided herein,

determine the qualifications for membership therein and shall be the sole judge of the qualifications of applicants for such membership.

A member must not practice or claim to practice, support, cooperate with or in any other way endorse any exclusive or sectarian system of medicine. He shall be honorable and ethical in his conduct and shall subscribe to the principles of medical ethics of the American Medical Association and to such as may from time to time be adopted by the California Medical Association, and shall recognize the authorized officers of his component society and of this Association as the proper authority to interpret any doubtful points in ethics.

Every applicant for membership in a component society shall fill out and sign in duplicate the application blanks provided by the society, which prescribe the necessary qualifications for membership. One copy of each such application shall be promptly forwarded to the office of this Association.

Section 5.—Component Society Rosters of Members and of Licensed Physicians in Counties

The secretary of each component society shall keep a roster of its members and of the non-affiliated registered physicians of the county, on which shall be shown the full name, address, school and date of graduation, date of license to practice in this State and such other information as may be deemed necessary. In keeping such roster the component society's secretary shall note and at once notify the Secretary-Treasurer of this Association of any changes in the personnel of the profession, by death, by resignation, or by removal to or from the county, and in making his annual report he shall endeavor to account for every physician who has lived in the county during the year. The secretary of each component society shall make a monthly report to the Secretary-Treasurer of this Association upon such forms and including such subjects as are herein provided, and as the Council may authorize.

CHAPTER II.—MEMBERSHIP

Section 1.—What Constitutes Membership

The name of a doctor of medicine on the official roster of this Association, after it has been properly reported by the secretary of his component society, and after the dues or other assessments due this Association shall have been paid by the component society for each such member according to the class of membership held by each component society member, shall be *prima facie* evidence of membership, and of his right to register at the Annual Session.

Section 2.—Qualifications for Membership and Method of Election Thereto

(a) *Active Members.* Active members shall comprise all active members of all the component societies. No person shall be eligible for election to active membership in a component society unless he shall hold the degree of Doctor of Medicine issued to him by an institution of learning, accredited at the

time of conferring such degree by the American Medical Association or the Association of American Medical Colleges. He must also hold an unrevoked license to practice medicine and surgery in the State of California; provided, however, that subject to the minimum qualifications prescribed by this Constitution and the By-Laws, each component society shall be the exclusive judge of the qualifications of the members thereof.

(b) *Associate Members.* Associate members may be elected by the Council, upon recommendation of the component society of the county in which the associate member maintains his principal office of business, from those doctors of medicine engaged in teaching or research work or holding positions in the Federal Service or otherwise, and from other persons engaged in medical teaching or research or other scientific work contributing to medicine and the public health.

(c) *Retired Members.* The Council, on recommendation of any component society, may grant retired membership to those active members who have ceased the practice of medicine for reasons satisfactory to such component society and the Council, and who shall have been active members of the Association for a total of ten years prior thereto. Retired membership shall endure as long as the retired member does not engage in the practice of medicine; but in the event that a member classified as retired resumes the active practice of medicine, such resumption of practice shall automatically terminate retired membership and reestablish active membership. Upon resumption of active practice by any retired member, the secretary of his component society shall transfer such member from the retired classification to the active classification, and notify the Secretary of this Association, who shall do likewise with respect to the membership rolls of this Association.

(d) *Honorary Members.* The House of Delegates on recommendation by the Council may elect as honorary members any persons distinguished for their services or attainments as doctors of medicine or in the field of public health, or for research or other scientific work contributing to medicine.

(e) *Life Members.* Life members of the California Medical Association may be elected by the Council on the recommendation of any component county society from those active members thereof who (1) have been active members of this Association continuously for a period of twenty (20) years or more and are more than fifty (50) but less than sixty (60) years of age and have tendered to this Association a life membership fee of one hundred fifty dollars (\$150.00) or such other sum as the House of Delegates may from time to time determine; or (2) have been active members of this Association continuously for twenty-five (25) years or more and are more than sixty (60) but less than sixty-five (65) years of age and have tendered to this Association a life membership fee of one hundred dollars (\$100.00) or such other sum as the

House of Delegates may from time to time determine; or (3) have been active members of this Association continuously for a period of twenty-five (25) years or more, are more than sixty-five (65) but less than seventy (70) years of age and have tendered to this Association a life membership fee of fifty dollars (\$50.00) or such other sum as the House of Delegates may from time to time determine; or (4) have been active members of this Association continuously for twenty-five (25) years or more and are more than seventy (70) years of age. Those active members falling within Classification 4 need not be recommended by any component county society but are eligible to life membership on direct application to the Council. The Council may not elect to life membership any active member whose membership has not been continuous or who has ever been censured, suspended or expelled from the American Medical Association, this Association, any state medical association which is a constituent unit of the American Medical Association, or any county medical society which is a component part of this Association or a unit of any other state medical association.

(f) *Affiliate Members.* The House of Delegates may, from time to time, establish special and limited classes of membership in this Association for internes, junior and senior residents, or house officers, practicing in hospitals in this state. In establishing such special membership for internes, junior and senior residents, or house officers, the House of Delegates may determine the qualifications, duration and privileges of such membership.

The House of Delegates may also from time to time provide for affiliation with the California Medical Association, on an affiliate basis, of undergraduate medical students attending medical schools in this state. Unless the House of Delegates determines to the contrary, such special or affiliate members shall pay uniform minimum dues as determined by the Council.

Section 3.—Rights and Privileges of Membership

(a) *Active Members.* Subject to the provisions of this Constitution and By-Laws, all active members shall have the right of suffrage and all other rights and privileges of the Association.

(b) *Associate Members.* Subject to this Constitution and By-Laws, associate members shall have all of the rights and privileges of active members, except the right to vote or hold office.

(c) *Retired Members.* Subject to this Constitution and By-Laws, retired members shall be entitled to receive publications of the Association at such rates as the Council from time to time may determine. Retired members shall not have the right to vote or to hold office. Retired members shall not be required to pay dues unless the House of Delegates determines otherwise, and then the rate of dues shall be fixed by the House of Delegates.

(d) *Honorary Members.* Subject to this Constitution and By-Laws, honorary members shall not

be obliged to pay dues and shall not have the right to vote or to hold office.

(e) *Life Members.* Life members shall not be obliged to pay dues and shall not be liable for assessments of any kind or nature. If active membership in good standing is maintained in his component society, each life member shall have the right to vote, to hold office, and shall have all other rights and privileges of the Association. If active membership in his component society is not maintained, the rights and privileges of a life member shall be those of a retired member.

(f) *Affiliate Members.* Affiliate members shall not have the right to vote or hold office, and may be elected to such membership for specified terms and subject to continuance of student, interne or hospital resident status, but shall have all other privileges of membership.

(g) *Additional Classes of Membership.* Subject to this Constitution and By-Laws, the House of Delegates may from time to time establish special and limited classes of membership and fix the dues, qualifications, duration and privileges of such membership.

Section 4.—Termination of Membership

(a) *By Expulsion from Component Societies.* Expulsion from any component society, after due proceedings in accordance with these By-Laws, upon becoming final terminates all the rights and privileges in this Association of the member so expelled.

(b) *By Failure to Pay Dues.* If the annual assessment of dues, payable to this Association by any member of this Association, is not paid on or before April 1 of any year, such member shall automatically lose his membership in this Association as of April 1 of such year. The Council of this Association, in its discretion, upon payment of such unpaid dues, and any other assessments or dues accruing thereafter, may at any time reinstate such member.

(c) *By Revocation of Physician and Surgeon's Certificate.* Any member whose license to practice medicine and surgery in the State of California is revoked shall, upon receipt of written evidence of such revocation by the Secretary of this Association, thereupon cease to be a member of this association.

(d) *Acts and Conduct Subjecting Member to Censure, Suspension or Expulsion by Component Society.* Any member of a component society who has been adjudged guilty of a criminal offense involving moral turpitude, or who has been duly adjudged guilty by his society, in accordance with the procedural requirements of these By-Laws, of gross misconduct as a physician or a surgeon or of a violation of any of the provisions of the constitution or by-laws or principles of professional conduct of his society or of the principles of medical ethics promulgated from time to time by this Association or by the American Medical Association, shall be subject to censure, suspension or expulsion from his society by such component society.

Section 5.—Disciplinary Procedure

Disciplinary Procedure for Component Societies. The procedure to be followed by each component society with respect to the censure, suspension or expulsion of a member shall be:

(1) *Charges; Formal Requirements; a Formal Charge Must First Be Made.* Such charge must be in writing, signed by the accuser, and if made by a person other than a member of the society must be sworn to before an officer of the State of California authorized to administer oaths. Charges must state the acts or conduct complained of with reasonable particularity.

(2) *Charges; Filing; Secretary's Duties; Presentation to Board of Directors (or Grievance Committee).* Charges must be filed with the secretary of the accused member's component society. At the first regular or special meeting of the Board of Directors (or other governing body, whether called Council, Board of Trustees, Executive Committee, or any other name, all of which are herein included in the term "Board of Directors") of such component society held after charges are filed, the secretary must present said charges to the Board. The Board of Directors shall then or at any adjournment of said meeting, but not more than thirty days after the date of such regular or special meeting, consider the charges, and in its discretion determine whether or not further proceedings shall be conducted. If the Board determines that no further action shall be taken, the charges shall be dismissed.

If a component society has no board of directors and more than ten members, its members must, at a regular meeting of the society, elect a grievance committee of not less than five (5) active members in good standing; two members shall be designated by the society to serve for a period of one year, two members shall be designated to serve for a period of two years, and one member shall be designated to serve for a period of three years. At the expiration of the terms of office of the respective members of such committee, successors shall be elected in like manner to serve for a period of three years each. Such grievance committee shall exercise all the power and perform all the duties herein conferred upon boards of directors in the manner and within the times herein provided. If a society has less than eleven members, the entire society, exclusive of the accuser and accused, shall constitute the grievance committee. All references herein to board of directors shall be deemed to include such grievance committees, and component societies of ten members or less.

(3) *Service of Charge Upon Accused.* If the Board of Directors determines that further action, with respect to said charges, shall be taken, the Board must, within fifteen (15) days after such decision, cause a copy of the charges to be served upon the accused by personally delivering a copy thereof to him, or by depositing a copy thereof in the United States mail, registered and addressed to the accused either at his last known office or at his last known residence.

(4) *Time and Place for Hearing; Service of Notice Thereof.* The Board of Directors shall, at said meeting at which its decision to proceed is made, fix a time and place for a hearing of said charges. Written notice of the time and place set for the hearing shall be served upon the accused within fifteen (15) days by personal delivery or registered mail as aforesaid.

The time so set for a hearing shall be not less than fifteen (15) days after the accused has been served as aforesaid, with a copy of the charges and with the notice of the time and place set for the hearing; said hearing must be held within the county in which the accused holds his county society membership. The hearing before the Board of Directors must actually commence within six months from the date of the filing of written charges. Failure to comply with this requirement shall constitute an automatic dismissal of the charges.

(5) *Right of Accused to Answer; Time to Answer; Formal Requirements.* The accused may, not less than five (5) days before the time set for a hearing, answer said charges. The answer shall be in writing and the original and three copies shall be filed with the secretary of the society; provided, however, that the failure of the accused to answer shall not be deemed to be an admission of the truth of the charges or a waiver of the accused's right to a hearing with respect to said charges.

(6) *Rules Governing Hearing; Duties of Referee of Society; Advice as to Procedure Only.* The Board of Directors shall give ample opportunity both to the accuser and the accused to be heard in person, and to present all testimony, evidence, or proofs which the accuser or the accused may deem necessary, provided that the Board may reject all testimony, evidence, or proofs, which in the judgment of the Board are immaterial, irrelevant or unnecessarily repetitious.

Either the Council or the Executive Committee of the California Medical Association, whenever it shall come to the attention of either thereof that a disciplinary proceeding is pending before any component society, may of its own motion, and shall, upon the request of such component society or of the member or members thereof the subject of any such disciplinary proceeding, appoint a referee who may, but need not be, a member of the California Medical Association, and shall cause the Secretary of the California Medical Association to notify the secretary of such component society of such appointment. The referee so appointed shall preside at the hearing of said charges and shall make all decisions concerning the admission or rejection of testimony or other evidence and procedure. The referee shall not, however, have any voice nor participate in any manner in the determination by the Board of Directors of the disposition of the charges. During the hearing the referee shall perform all duties normally performed by the presiding officer of the Board of Directors.

(7) *Record of Proceedings; Shorthand Reporter; Duty of Secretary to Preserve Board Records; Right*

of Accused to Copy. The secretary shall preserve the original of said charges with a certificate of personal delivery or of mailing of a copy or copies thereof, as the case may be, the original notice of the time and place set for the hearing with a certificate of personal delivery or of mailing of a copy or copies thereof, as the case may be, and the original of the answer filed by any member accused if an answer be filed. At the hearing, the Board of Directors shall, at the expense of the society, employ a competent shorthand reporter to record and transcribe into typewriting testimony adduced on behalf of the accuser and the accused and all rulings made. The original charges with certificate of service thereof, the original notice of time and place for hearing with certificate of service thereof, the answer or answers, if any be filed, all documentary evidence introduced at the hearing, the typewritten transcript of the testimony and the written decision of the Board of Directors shall constitute the record of the entire proceedings. The Secretary shall, upon receipt from accused of a sum sufficient to defray the cost thereof, cause a copy or copies of such record to be transcribed, certified and furnished to the accused.

(8) *Decision of Board; When Must Be Written; Rules Governing Vote of Board.* The Board of Directors, after having given the accuser and the accused member full opportunity to be heard, shall conclude the hearing and shall render its decision in writing not more than thirty (30) days thereafter. Hearing shall include any oral arguments and the filing and consideration of any written briefs. The Board of Directors by a two-thirds affirmative vote of all the eligible members of the Board present and voting may exonerate or may censure, suspend or expel the accused member as the facts in its opinion may justify.

The decision of the Board of Directors may be expressed in resolution adopted by said vote. The decision may not contain an opinion and need only be signed by the secretary or the acting secretary of the component society.

The failure of at least two-thirds of all the members of the Board of Directors present and voting to agree upon the disposition of the charges shall act automatically as a dismissal of the same. No member of the Board of Directors not present at the said hearings for the entire time thereof shall be entitled to vote with respect to the disposition of the charges.

(9) *Suspension; Maximum Period; Status of Suspended Member.* If the Board of Directors shall determine to suspend an accused member, the term of such suspension shall be within the discretion of the Board, provided that in no case shall a member be suspended for a period greater than one year. A suspended member shall have no rights or privileges in the society, provided that at the expiration of the period of suspension such suspended member shall not be reinstated to membership in good standing until he applies for reinstatement and pays all dues accrued during said period of suspension.

(10) (a) *Board's Decision; Secretary to Send Copies.* Within ten (10) days after the decision of

the Board of Directors, the secretary of the society shall transmit a copy of the decision to the Board, to the accused member or members and to the Secretary of this Association.

(b) *Board's Decision Final; Subject to Appeal.* The action of the Board of Directors of a component society shall be final, subject only to appeal to the Council of the California Medical Association in such cases as are provided in these By-Laws.

The decision of the Board of Directors shall not become effective until the expiration of ten days after time during which an appeal may be taken to the Council of this Association. Filing an appeal with the Secretary of this Association shall automatically stay the execution of the decision of the Board of Directors of the component society until written notice of the action of the Council of this Association with respect to appeal has been received by the secretary of the component society from which the appeal was taken.

(c) *Technical Rules of Evidence Not to Govern Disciplinary Hearings.* All hearings with respect to the disposition of charges against a member of a component society shall be held and conducted in such manner as to ascertain all the facts fairly to the accuser and accused, eliminating all formal or technical rules and requirements which ordinarily pertain to judicial proceedings.

(d) *Members Agree That No Cause of Action Shall Accrue.* Any person so charged, censured, suspended, or expelled shall have no claim or cause of action against this Association, a component society or any member, director, councilor or officer, thereof by reason of such charges, or the hearing or the consideration thereof or censure, suspension or expulsion therefor.

(e) *Expelled Members; Right to Apply for Membership; When Accrues.* Any person whose membership has been involuntarily terminated in a component society by reason of violation of these By-Laws may apply for membership after the expiration of one year from the date said membership was terminated, and such application shall be considered in the same manner as a new application for membership.

Section 6.—Procedure for Appeal to Council

A member of a component society censured, suspended or expelled by his county society may appeal from the action of such component society to the Council of this Association within the period of two months succeeding the date of such censure, suspension, or expulsion. Appeals shall be in writing and be filed within the said period of two months in the office of the Secretary of this Association. Said appeal shall be accompanied by a copy of the record of the entire proceedings before the component society duly certified by its secretary, provided the Chairman of the Council may, in his discretion, extend the time of the appellant to file said record. Upon the filing of an appeal the secretary shall present it to the first subsequent meeting of the Executive Committee or

the Council. Appeals shall be heard by the Council only after reasonable notice of not less than ten (10) days in writing of the time and place of the hearing of the appeal has been given to the appellant member and the president and secretary of the component society as provided in Section 4 hereof.

Section 7.—Rules Governing Appeals

In hearing appeals, the Council shall review all questions of procedure, and may, in its discretion, review the evidence contained in the record of the original proceedings held before the Board of Directors of the component society. The Council may make findings of fact contrary to, or in addition to, those made by said Board of Directors. Such findings may be based on the evidence adduced before said Board of Directors, either with or without the taking of evidence by the Council. The Council shall use any lawful means which in its judgment will best and most fairly present all the facts involved. The Council may, for the purpose of making such findings or for other purpose in the interest of justice, take additional evidence of or concerning facts material to the questions involved, or may, for such purpose, appoint a committee of its members or any notary public to act as referees or referee for the taking of such additional evidence.

Such referee or referees shall render a report in writing to the Council, which report shall contain a clear statement of the facts found by the referee or referees from the testimony or evidence adduced.

The Council may affirm, reverse or modify the decision of the Board of Directors or make such other disposition of the proceedings as it may deem proper.

In every case of an appeal the individual councilors and the Council, through a committee thereof, prior to any hearing being held upon the appeal, shall exert all proper efforts at conciliation and compromise.

This Association may be represented by its attorney to advise the Council upon procedural questions only.

The decision of the Council shall be final and bind the appellant member and the component society.

Section 8.—Registration at Annual Sessions Necessary for Participation Therein

Each member in attendance at any Session shall register, after his right to membership has been verified by reference to the records of this Association. No member shall take part in any of the proceedings of any Session until he has complied with the provisions of this section of the By-Laws.

Section 9.—Component Society Secretaries to Furnish Date on Applications for Membership

The secretary of each component society, on forms or blanks supplied by this Association for that purpose, shall notify the Secretary-Treasurer of this Association in writing, as soon as possible, of each application for membership in such component society, with the name, address, and all other particulars regarding the applicant known to such secretary.

Section 10.—Component Society Membership

Lists to Be Sent to Secretary-Treasurer. It shall be the duty of the secretary of each component society to furnish the Secretary-Treasurer before the first day of March of each year a list of names and addresses of all members in good standing on the first day of January of each year, and to notify in writing the Secretary-Treasurer of this Association monthly of all changes in membership of the component society, with corresponding changes of address.

Section 11.—Membership Where No Component Society Exists

Any Doctor of Medicine residing in an area in which there is no component society may apply for membership in the component society most convenient to the area in which he practices medicine, and if otherwise qualified he may be elected to membership therein.

Section 12.—Membership Where Major Office and Residence Are in Different Component Society Areas

A Doctor of Medicine may apply for membership only to that component society whose charter covers the area in which his major office for professional practice is located; provided that a Doctor of Medicine who resides in one county and practices in another may apply for membership to the component society whose charter covers the area in which his residence is located, if both such component society and the component society of the area in which his major office is located approve.

Section 13.—Membership as Affected by Transfer of Location of Office

A member who changes his office from the county through whose component county society he holds membership in this Association, to another county in which there is a component society, is eligible to membership in the component society of his new location on the presentation of a transfer card, and satisfactory evidence that his dues have been paid in full in the component society in which he holds membership; provided, however, that no evidence which would disqualify him for membership exists.

He shall forfeit his membership in this Association one year after such change of location of practice unless after proper application he is elected to membership in the society of the county to which he has moved.

Any member who has heretofore changed his location of practice as aforesaid shall have one year after the date of adoption hereof to comply with the provisions of this section.

Section 14.—Transfer Cards

When a member in good standing in a component society moves to another county or other jurisdiction in this State he shall, on request, be given a transfer card, without cost. He must assume such financial obligations as shall be deemed proper by the com-

ponent society to which he is transferred, and to which he makes application for membership by transfer.

CHAPTER III.—HOUSE OF DELEGATES**Section 1.—Secretaries of Component Societies to Furnish Lists of Delegates and Alternates: Election and Lists**

Each component society shall elect a delegate and one alternate for such delegate in an aggregate number of delegates and alternates equal to the total number of delegates and alternates to which the component society is entitled. At least sixty days prior to the next scheduled session, the secretary of each component society shall forward to the Secretary-Treasurer of the Association, on forms provided by the Association, the names and addresses of each delegate and his alternate elected by such component society, and shall certify thereon the dates of election and expiration of terms of service of each delegate and his alternate.

Failure to conform to this provision shall constitute grounds for disqualification of the delegation in default for the scheduled session, at the discretion of the House of Delegates.

Section 2.—Representation

Each component society shall be entitled to one delegate for every one hundred (100) active members, or fraction thereof, as of the first day of the preceding November.

Section 3.—Limitations on Seating of Delegates

Only duly elected delegates or their elected alternates may be seated at any session of the House of Delegates unless the Secretary of the Association has been given due notice of substitution at least fifteen (15) days in advance of the session.

Section 4.—Disqualification of Delegates or Alternates for Absence From a Session

Any delegate absent without good cause from two or more consecutive meetings of the House of Delegates, and who has failed to give fifteen days' notice to the Secretary of the Association of his inability to be present, shall thereupon be disqualified as a delegate and, in addition, ineligible for re-election as a delegate or alternate for three years immediately succeeding the expiration of his term; except that the Committee on Credentials may excuse absence on presentation of good cause therefor.

Section 5.—Notification of Delegates

The Secretary of each component society promptly shall notify in writing each delegate and alternate immediately after his election to such office, and shall expressly direct each delegate's and alternate's attention to the provisions of Section 5 above.

Section 6.—Qualifications of Delegates and Alternates

(a) At least three (3) years' active membership in good standing in the component society immediately

preceding election shall be required for election as delegate or alternate.

(b) Only duly elected delegates, or properly qualified alternates, may be seated with the right to vote.

(c) No District Councilor may be elected as a delegate or alternate by a component society.

Section 7.—Sessions and Meetings

(a) In each year there shall be two sessions of the House of Delegates; the time and place of such sessions to be determined by the Council as far as possible in advance and notice thereof published in the Journal of the Association. One of these sessions shall be held in the first six months of each calendar year and is designated the Regular Session; the other shall be held in the last six months of each calendar year and is designated the Interim Session.

(b) In addition to regular sessions, special meetings of the House of Delegates may be called at any regular or special meeting of the Council, by a two-thirds vote of all the members of the Council, or by written call stating the object of the meeting, filed with the Secretary in the office of the Association and signed by one-half or more of the members of the House of Delegates. Upon the filing of such call with the Secretary, the Council shall within thirty (30) days thereafter fix the time and place for the holding of such special meeting and cause written notice thereof stating the object of the meeting to be sent by United States mail, postage fully prepaid, to each member of the House of Delegates, addressed to him at his office or place of residence, as shown by the records of the Secretary's office, at least fifteen (15) days prior to the date of meeting.

(c) Officers of the Association shall be elected at the regular session.

(d) Resolutions and other new business may be introduced at either the Regular Session or the Interim Session but shall not be acted upon until the next Regular or Interim Session, provided, however, that emergency measures may be acted upon at the session in which they are introduced but shall require a two-thirds vote for passage.

Section 8.—Division of Scientific Work

The House of Delegates, either upon recommendation of the Council or on its own initiative, shall provide for division of the scientific work of the Association among appropriate sections and assemblies.

Section 9.—House of Delegates Committee

Prior to or at the commencement of each regular session the Speaker of the House shall appoint from the members thereof the following committees:

1. A Committee on Credentials,
2. A Reference Committee on Finance, to review the Reports of the Secretary-Treasurer and Executive Secretary and to study and make recommendations to the House of Delegates on the budget submitted by the Council and the amount of dues for the ensuing year.

3. A Reference Committee on the reports of Officers, Council, Standing and Special Committees, and

4. Two or more Reference Committees on resolutions, amendments to the Constitution and By-Laws, and new and miscellaneous business (the Speaker may allocate amongst these committees all business properly referable to them).

Section 10.—Membership of Credentials and Reference Committee

Each of the aforesaid committees shall consist of three members, the chairman of each to be designated by the Speaker.

The Speaker, the House concurring, shall refer said reports, resolutions, and business to the respective Reference Committees, but may allocate among them any of said reports, resolutions or portions thereof, and other business, to avoid duplication and to expedite the business of the House of Delegates.

Each Reference Committee shall prepare a written report dealing with and making recommendations on all matters submitted to it. In those instances in which resolutions or other matters remain before a Reference Committee between meetings of the House of Delegates, copies of such resolutions or other matters and the recommendations of the committee thereon shall be mailed or delivered by the Secretary to each elected Delegate and Alternate at least thirty days (or if less than thirty days intervenes between meetings, as early as possible) prior to the meeting of the House of Delegates at which such resolutions or other matters and recommendations concerning them are to be considered. The report of each committee may be acted upon as a whole or section by section, as the House may determine.

Section 11.—Special Committees of House of Delegates

The Speaker, the House of Delegates concurring, shall have the right to appoint special committees for special work. All committees of the House of Delegates shall present their reports to the House of Delegates in writing.

Section 12.—Duties of Credentials Committee

The Secretary of the Association shall supply the Committee on Credentials with the necessary information concerning the membership of the House of Delegates.

The Secretary shall give this committee a list of component societies, showing the total membership as of November 1 of the preceding year. This committee shall ask each delegate and alternate to present his written credentials, but shall accept the official written list submitted by the secretary of any component society; provided that such written list be sent to the Secretary of the Association at least fifteen days before the beginning of the annual session.

The Committee shall make a written report to the House of Delegates of the delegates and alternates entitled to membership therein.

Section 13.—Delegates to the American Medical Association

The House of Delegates shall elect delegates and alternates to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that organization.

Section 14.—Special Committees Appointed by House of Delegates

The House of Delegates shall have authority to appoint committees for special purposes from among members of the Association who may or may not be members of the House of Delegates. Such committees shall report in writing to the House of Delegates; and the members, the House concurring, may participate in the debate on their reports.

CHAPTER IV.—COUNCIL

Section 1.—Auditing Committee of Council

The Chairman of the Council, subject to its approval, shall appoint an auditing committee of three members, designating one of the members as its chairman.

The Auditing Committee shall inspect all bills and claims against the Association, and no bill or claim shall be paid except upon voucher or draft having the approval of at least two of the three members of the Auditing Committee; provided, however, that any bill or claim may be paid without the approval of any member of the Auditing Committee by a majority vote or written approval of a majority of all the members of the Executive Committee.

Section 2.—Executive Committee of Council

The Executive Committee shall consist of the President, President-Elect, Chairman of the Council, Chairman of the Auditing Committee, and one other member of the Council (elected by the Council at its organization meeting each year). The Secretary-Treasurer and Editor shall be members ex officio, but without the right to vote. The organization, duties and powers of the Executive Committee shall be as provided in the By-Laws.

Section 3.—Council: Organization

At the first meeting of the Council held after the adjournment of the last meeting of the House of Delegates at the regular session of the Association, the Council shall organize by the election of one of the Councilors as Chairman of the Council, who shall serve as such up to the first Council meeting held after the adjournment of the last meeting of the House of Delegates of the next succeeding regular annual session of the Association; and a Vice-Chairman who shall hold office for the same term, and who, in the absence of the Chairman, shall perform the duties of the Chairman. The Secretary-Treasurer of the Association shall serve as the secretary of the Council.

Section 4.—Duties of District Councilors

Each District Councilor shall be organizer, peacemaker and censor for his district.

(a) *Visitation of Component Societies; and Report Thereon.* He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exist, of inquiring into the condition of the profession, and of maintaining touch with the activities of the component societies of his district. He shall in writing make an annual report of this work and of the condition of the profession of each county in his district to the Council, which shall take such action thereon as it may deem best.

(b) *Expenses of Councilors and Officers.* Councilors and officers shall be allowed railroad fare or mileage not exceeding 5 cents a mile, plus an allowance for maintenance expense of ten dollars a day, while absent from their places of residence; (a) in attending association, district or county society meetings; (b) meetings of committees of the Association; (c) authorized councilor or officer visits to county societies; (d) and otherwise when on official business, authorized or approved by the Council.

Section 5.—Mail Ballot

The Chairman of the Council, at any time, may direct the Secretary to submit any urgent matter or question to the members of the Council by mail ballot, the question or proposition being prepared through conference of the Secretary with the Chairman of the Council and the Chairman of the Executive Committee; and the vote of two-thirds of the members upon such question by mail or telegraph shall be binding upon the Council.

Section 6.—Registry

The Secretary-Treasurer, in writing, shall request each Councilor to register his address where he desires all notices to be sent to him by mail or telegram.

Section 7.—Order of Business

At meetings of the Council, business shall be transacted as the Council may determine from time to time by resolution.

The Council shall provide and fix the order of business of the House of Delegates at each session, provided that the House of Delegates may change the order of business by a majority vote.

**Section 8.—Preparation of Budget;
Annual Assessment**

The Auditing Committee, prior to December 1 of any year, shall submit to the Executive Committee, for consideration at its December meeting, a budget under which the Association shall work in the fiscal year following the next annual session.

The Executive Committee, after consideration of the Auditing Committee's proposed budget, shall submit the same to the Council, prior to the spring meeting of the Council, with a report of its own containing suggested changes, additions, or comments.

The Council in turn shall consider the two proposed budgets so submitted, and shall then make a final draft of a proposed budget for the Association, to be submitted to the House of Delegates at the next annual session.

The Council shall recommend to the House of Delegates the amount of the annual dues or assessments of each member of the Association.

Section 9.—Committee on Arrangements for Regular and Interim Sessions

(a) *Appointment and Duties.* The Chairman of the Council, subject to the approval of the Council, shall, at least six months before each regular session, appoint a Committee on Arrangements for the regular and interim sessions of the ensuing year, one member thereof being designated as the general chairman. This committee shall consist of five members.

The Secretary-Treasurer of the Association shall be ex officio a member of this committee.

This committee shall have charge of all local arrangements not otherwise provided for.

The terms of office of members of this committee shall expire when the succeeding committee on arrangements is appointed.

As the local Committee on Arrangements this committee shall provide suitable meeting places and shall have general charge of all local arrangements. The committee shall have power to appoint local advisory members and subcommittees to aid in its work.

(b) *Commercial Exhibit.* The Council shall decide what portion of the income from commercial exhibits or other convention services shall go to the local Committee on Arrangements. The location and rules for the commercial exhibits and other accessory annual session activities shall be subject to the approval of the Council.

(c) *Local Convention Expenses.* The Council shall decide what portion of the local expenses shall be borne by the Association.

(d) *Report on Committee on Arrangements.* The Committee on Arrangements shall make and file with the Secretary-Treasurer of the Association an itemized, detailed report of all of its receipts and disbursements, and shall remit any moneys due the Association remaining in its possession, to the Secretary-Treasurer.

Section 10.—Offices

The Council shall provide and secure such offices for the Association as may be required to conduct its activities and business properly.

Section 11.—Executive or Field Secretaries or Representatives

The Council may employ one or more Executive or Field Secretaries or Representatives, who need not be physicians nor members of the Association. The duties of such a representative or representatives, if appointed, shall be determined by the Council by resolution.

Section 12.—Legal Counsel

The Council at its annual organization meeting shall appoint one or more legal advisors, giving each such title as may be deemed proper. It shall fix the

amount of retainer and other fees. By resolution it shall indicate what duties shall be assigned to each advisor. The Council shall appoint such attorneys-at-law licensed in California at its annual organization meeting.

The Council shall have the right to request the attendance of Counsel of the Association at any meetings at which it might desire his presence and advice, and at such meetings he shall call the attention of the Council to matters in which the legal aspects may be of importance, and shall give such other opinions in special matters as may be requested of him by the Council.

The General Counsel shall present in writing as promptly as the same may be properly prepared, such legal opinions as may be requested by the House of Delegates, the Council or the Executive Committee.

CHAPTER V.—COMMITTEES

Section 1.—Standing Committees

The standing committees of this Association shall be as follows:

- (a) Scientific Work
- (b) Public Policy and Legislation
- (c) Medical Defense
- (d) Medical Education and Medical Institutions
- (e) Hospitals, Dispensaries, and Clinics
- (f) Medical Economics
- (g) Associated Societies and Technical Groups
- (h) History and Obituaries
- (i) Industrial Practice
- (j) Postgraduate Activities
- (k) Public Relations
- (l) Physicians' Benevolence Committee
- (m) The Reference Committees of the House of Delegates

until final adjournment of each regular session.

Section 2.—Standing Committees; How Elected; Term of Office

Unless otherwise provided in these By-Laws, each of the standing committees (except House of Delegates Reference Committees) shall consist of one member of the Council and two other members. Members of standing committees (other than House of Delegates Reference Committees) shall serve for a term of three (3) years. One member of each of these committees shall be nominated annually by the Council and if approved by the House of Delegates shall be deemed elected.

Section 3.—Report Procedure for All Committees

Regular standing and special committees of the Association may make investigations and surveys on authorization of the Council or House of Delegates, but all recommendations and reports of all committees (unless expressly otherwise provided in the Constitution or By-Laws) must be submitted only to the Council or House of Delegates. Other than as herein stated no committee is authorized to act for or represent this Association.

Section 4.—Advisory Groups to Standing Committees

To aid it in its work, each committee, if it so desires, shall have the power to appoint an Advisory Group to its committee, consisting of from two to ten members. Such advisory members, if present at a regular committee meeting, shall not have the right to vote.

Section 5.—Officers of Standing Committees

The chairman of each of these committees, except the Committee on Public Relations, shall be nominated and elected annually by the Council, by and with the approval of the House of Delegates. The chairman of the Committee on Public Relations shall be elected by said committee, subject to the approval and confirmation of the Council, and in the event of a failure to elect within sixty days after adjournment of the annual session the Council shall elect said chairman. Each of these committees shall, each year, except as otherwise provided in these By-Laws, at its first meeting or official consultation, during or following the annual session elect its own secretary.

Section 6.—Secretary-Treasurer's Notice to Standing Committees

The Secretary-Treasurer of the Association, within one month after the annual session, shall write the Committee Chairman of the preceding year, to call a meeting for organization and consideration of any business. The Secretary shall also send a copy of this letter to each of the other members of the committee.

Section 7.—Annual Reports of Standing Committees

At least sixty days prior to the annual session, each of these committees shall submit a written report to the Council on its work during the preceding year, the same to be printed in the Pre-Convention Bulletin as otherwise provided.

Section 8.—Committee on Scientific Work

The Committee on Scientific Work shall consist of the Secretary-Treasurer, the secretaries of the sections on general surgery and general medicine and three other members to be elected by the Council, each of these three members to serve three years, one member being elected each year. The Secretary-Treasurer shall be chairman.

This committee shall determine the character and scope of the scientific proceedings of the Association for each session, and shall invite the guest speakers, subject to the instructions of the Council.

At least thirty days previous to each annual session it shall prepare and issue a program announcing the order in which papers and discussions shall be presented.

This committee shall have one joint session with the section secretaries, at a time and place to be designated by the chairman of the committee, at least forty-five days prior to the annual session, to coordinate more efficiently the various activities of the Association at its annual session. The chairman of the local committee on arrangements shall be invited to attend this meeting.

Section 9.—Committee on Public Policy and Legislation

The Committee on Public Policy and Legislation shall consist of three elected members, and ex officio, the President and President-Elect.

The chairman of the committee, and in his absence, the President, shall act as chairman at the joint meetings of this central state group and of auxiliary county groups.

(a) *Functions of the Committee.* The Committee on Public Policy and Legislation and its auxiliary county groups shall represent the Association in securing and enforcing legislation in the interest of public health and of scientific medicine, subject, however, to the approval of the Council.

(b) *County Auxiliary Committees on Public Policy and Legislation.* Each component society shall appoint or elect three of its members as members of its auxiliary Committee on Public Policy and Legislation, designating one member as chairman; and the component society secretary shall send promptly the names and addresses to the Secretary of this Association.

(c) *Work of Auxiliary County Committees.* The Committee on Public Policy and Legislation of this Association, with the sanction of the Council, shall formulate the duties of these county auxiliary committees and supply each member with a copy of its suggestions and instructions. The auxiliary committeemen shall be accountable to their component societies and to the Council of this Association for prompt and continued cooperation with the Committee on Public Policy and Legislation of this Association.

Section 10.—Committee on Medical Defense

The Committee on Medical Defense, subject to the approval of the Council, shall prepare plans and establish rules for the protection of the legal rights of members of this Association against whom suits for alleged negligence have been threatened or brought.

It may assist in the defense of any member sued for alleged negligence if the member was in good standing and had complied with the rules of the Council when the service on account of which suit was threatened or brought was rendered—provided that the committee determines that the position of the member merits such action.

Section 11.—Committee on Medical Education and Medical Institutions

The Committee on Medical Education and Medical Institutions shall serve in this State for the Council on Medical Education of the American Medical Association.

It shall keep in touch with the problems pertaining to medical education and to medical and other institutions of training for medicine and the healing art.

Section 12.—Committee on Hospitals, Dispensaries and Clinics

The Committee on Hospitals, Dispensaries and Clinics shall serve in this State for the Council on Hospitals of the American Medical Association.

It shall keep in touch with the problems arising in the fields of work of all types of hospitals, dispensaries and clinics giving special attention to those activities that are, or tend to become, a menace to the best interests of scientific medicine and of the profession and its members.

Section 13.—Committee on Medical Economics

The Committee on Medical Economics shall investigate matters affecting the economic status of doctors of medicine.

Section 14.—Committee on Associated Societies and Technical Groups

The Committee on Associated Societies and Technical Groups, subject to the instructions of the Council, shall endeavor to create proper liaisons between this Association and other state and national medical organizations, as well as with the organizations of related professions, such as dentistry, pharmacy and nursing. It shall also endeavor to bring about a proper understanding with non-medical organizations or groups of technicians and others whose work has a bearing on or is related to the practice of medicine.

Section 15.—Committee on History and Obituaries

The Committee on History and Obituaries shall compile and prepare for the archives and for the publications of the society suitable articles on the history of the Association and statements concerning deceased members. The Editor and the Secretary shall be members of this committee, *ex officio*.

Section 16.—Committee on Industrial Practice

The Committee on Industrial Practice shall keep in touch with matters and problems peculiarly connected with industrial practice.

Section 17.—Committee on Postgraduate Activities

The Committee on Postgraduate Activities, of which the Secretary-Treasurer shall be an *ex officio* member, shall use its best efforts to promote the postgraduate and clinical courses and instruction among the component county units of the Association.

The supervision of such postgraduate and clinical courses and instruction shall be carried on through the central offices of the Association, the Council being empowered to defray travel expenses of guest speakers and other costs incident to such work to such amount as in the judgment of the Council may be deemed proper. In the development of such postgraduate and clinical courses and instruction, it is stipulated that the component societies, through their constituted representatives, shall cooperate with the Standing Committee on Postgraduate Activities and shall also arrange to bear a proper proportion of the expense thereof of such amount as may be mutually agreed upon.

Section 18.—Committee on Public Relations

The Committee on Public Relations shall consist of the chairmen of the following committees: Public Policy and Legislation, Medical Economics, Associated Societies and Technical Groups, the President, President-Elect, and two additional members appointed by the Council.

The committee shall be responsible to the Council and the House of Delegates for all of its activities.

The Council or the Executive Committee may instruct the Committee on Public Relations, and outline to it certain policies and duties which shall be executed through the Director of Public Relations. In the event of any disagreement between the committee and the Council or the Executive Committee as to any activity or policy, the decision of the Council, after full discussion and hearing, shall be final.

The committee shall make recommendations to the Council for approval as to the time, the place, the number of meetings and the budget of the Department of Public Relations, provided that the Secretary shall call the first meeting of the committee within thirty (30) days following the annual meeting of the Association.

The Director of Public Relations shall be appointed by the Council (after consultation with the Committee on Public Relations) annually at the organization meeting of the Council. He shall serve at the pleasure of the Council and the Committee. He shall act under the supervision and instruction of the chairman of the committee in such matters as shall be approved and sanctioned by the committee, and be responsible to the committee.

The Council shall arrange with the general counsel to give the committee all legal aid.

The committee shall annually at its first meeting elect its own chairman, subject to the approval and confirmation of the Council. The Secretary of the Association shall be *ex officio* secretary. A majority of the committee shall constitute a quorum.

Section 19.—Physicians' Benevolence Committee

The Physicians' Benevolence Committee shall consist of three (3) members whose appointments and terms of office shall be as provided in Section 2 of this Chapter.

The committee shall be responsible to the Council and the House of Delegates for all of its activities.

The committee shall administer those funds, of this Association, hereinafter designated as comprising the Physicians' Benevolence Fund.

The committee's administration of said fund shall be subject to the provisions of this section.

(a) The funds which may from time to time be allocated to it, from the general funds of the Association, by the Council, are the funds for this committee.

(b) All bequests, voluntary contributions, and donations, from any source whatever, that may be received by this Association for the express and implied purpose of aiding needy members, and

(c) All other funds from whatever source derived, except Accounts Receivable, payments for indebtedness to this Association, Dues and Assessments received by this Association, which the payer, donor, or other person transferring the funds, expresses the intent that such funds shall be for aid to needy members.

Funds contained in the Physicians' Benevolence Fund may from time to time be disbursed by the Physicians' Benevolence Committee.

Section 20.—Publication of Committee Reports in Pre-Convention Bulletin

Reports of the standing and special committees, as approved, deleted or modified by the Council, shall be published in a pre-convention bulletin or in the official journal of the month preceding the date of the annual session of the Association. Such reports must be in the hands of the Secretary-Treasurer at least sixty days in advance of the annual session.

If a committee fails to send in its report in proper time, the name of the committee and the names of its members shall be printed as above indicated, with a statement that the committee failed to send in its report, and the Council, subject to the approval of the House of Delegates, shall be empowered under such conditions to make such changes in the personnel of the committee as in its judgment may be deemed best.

Section 21.—Additional Committees

The House of Delegates and the Council are authorized and empowered to appoint special committees, with special instructions as to work to be undertaken, whenever it is deemed impractical or improper for the contemplated duties to be performed by a standing committee.

CHAPTER VI.—POWERS AND DUTIES OF OFFICERS

Section 1.—Duties of the President

The President shall preside at all meetings of the Association.

He shall appoint all committees not otherwise provided for; he shall deliver an address at the regular session at such time as may be arranged, and shall perform such other duties as custom and parliamentary usage may require, or as the House of Delegates or the Council may direct.

He shall be the real head of the profession of the State during his term of office, and, as far as practicable, shall visit, by appointment, the various sections of the State and assist the Councilors in building up the component societies, and in making their work more practical and useful. The Council shall decide what portion of the expenses incurred on his official visits shall be paid by the Association.

He shall be ex officio a member of all committees of the Association.

Section 2.—Vacancy in Offices of President and President-Elect; How Filled

In case of vacancy in the offices of both President and President-Elect, the chairman of the Council shall act as the Acting President until a President is elected at the next annual session of the House of Delegates.

Section 3.—Duties of the Secretary-Treasurer, Executive Secretary and Field Representatives

The duties of the Executive Secretary and Field Representatives may be such as are delegated to them by the Council, and may be any and all duties as are specified under the various provisions of this section.

(a) *Minutes.* The Secretary-Treasurer (who may also be referred to as Secretary or Treasurer) shall attend the General Meetings of the Association, the meetings of the House of Delegates, of the Council and of the Executive Committee, and shall keep minutes of their respective proceedings in separate record books.

(b) *Custodian of Records.* He shall be custodian of all record books and papers belonging to the Association. He shall have the custody of the seal of the Association.

(c) *Contracts.* He shall countersign all contracts, agreements, conveyances, transfers or other instruments to which the Association is a party, the execution of which has been authorized by the House of Delegates or Council.

(d) *Checks.* The Secretary-Treasurer shall sign and issue checks or drafts only upon vouchers approved and signed by at least two of the members of the Auditing Committee or as otherwise provided.

(e) *Advertisements in Association Publications.* The Secretary-Treasurer, subject to instructions by the Council, shall carefully examine, approve, modify or reject all material for advertising in any of the publications of the Association, and shall, in all cases of doubt, refer such proposed advertisements to the Executive Committee or the Council for decision. He shall, with the approval of the Council or the Executive Committee, execute, for the Association, written contracts relating to advertising in the form approved by the Council, subject to instructions by the Council.

(f) *Registrar at Annual Sessions.* He shall provide for the registration of the members and delegates at the Annual Session.

(g) *Index Register of California Medical Licensiates.* He shall, with the cooperation of the secretaries of the component societies, keep a card-index register of all the licensed practitioners of the State by counties, noting the status of each in relation to his component society; and shall transmit a copy of this list to the American Medical Association, transmitting to its secretary each month a report containing the names of new members and the names of those dropped from the membership roster during the preceding month.

(h) *Register of Component Societies, Their Members and Officers.* He shall keep a register of all component societies, their respective officers, and of all members of the Association, with their addresses, and shall compile an annual directory of the same. He shall print in the January or February issue of the official journal the number of active members of each component society as of November 1st of the preceding year.

(i) *Notices.* He shall give all notices required by the Constitution and By-Laws of this Association, or by order of the Council, or of the Executive Committee, or by law.

(j) *Correspondence and Notifications to Committees.* He shall conduct the official correspondence, promptly notifying members of meetings, officers of their election, and committees of their appointment and duties, as outlined in the motions creating such committees. Such notifications shall be made in writing.

(k) *Assistants.* He shall employ and dispense with such assistants as may be ordered by the Council. The Council by resolution may outline the scope and duties of special employees acting under the Secretary-Treasurer.

(l) *Annual and Other Report Forms.* He shall supply all component societies with the necessary forms for making their annual and other reports to this Association.

(m) *Salary.* The amount of his salary shall be fixed by the Council.

(n) *Bond.* He shall give bond in such sum as may be fixed by the Council. The Association shall pay the premium on the said bond.

(o) *Duties as Treasurer.* He shall as Treasurer demand and receive all funds due the Association, together with bequests and donations, and shall promptly deposit the same in one of the depositaries thereof; and shall keep a proper and accurate record thereof, as well as of all funds disbursed by the Association.

(p) *Audits and Reports.* He shall subject his accounts to such examination or audit as the House of Delegates or Council may order.

He shall annually render an account of his work, and of the state of the funds in his hands, and make a report on the same and of his work as Secretary-Treasurer to the House of Delegates. He shall in writing also make such other reports as the House of Delegates or Council may request.

(q) *Disbursement of Association Moneys.* He shall pay out the money of the Association only upon a check or draft as otherwise provided herein.

(r) *Other Duties.* He shall perform such other duties as the Council or Executive Committee may direct.

Section 4.—Duties and Powers of the Chairman of the Council

The Chairman of the Council shall preside at all meetings of the Council. He shall sign all contracts

and agreements, conveyances, transfers or other instruments (other than advertising contracts) to which the Association is a party, the execution of which has been authorized by the House of Delegates or the Council. He shall sign all checks or drafts for the disbursement of funds of the Association. He shall, on behalf of the Council, deliver its annual report to the House of Delegates. He shall perform such other duties as may be imposed upon him by the Constitution or these By-Laws.

Section 5.—Duties of Vice-Chairman of the Council

The Vice-Chairman of the Council, in the absence or inability of the Chairman to act, shall be vested with all the powers and shall perform all the duties of the Chairman.

Section 6.—Duties and Powers of the Speaker

The Speaker of the House of Delegates shall preside at its meetings and shall perform such other duties as parliamentary usage may require. He shall appoint all committees authorized by the House of Delegates, unless otherwise provided.

Section 7.—Duties of Vice-Speaker

The Vice-Speaker shall act as Speaker in the absence of or at the request of the Speaker.

Section 8.—Duties of the Editor

The Editor and Associate Editor or Editors shall compile, edit and have charge of the official journal of the Association and such other publications as the Council or the House of Delegates may instruct him to undertake.

CHAPTER VII.—SESSIONS AND MEETINGS

Section 1.—Addresses at Regular Session

At the General Meetings, at such times as may have been arranged, shall be delivered the annual address of the President and, with the sanction of the Council, such other addresses and reports as may be deemed desirable.

Section 2.—Time Length of Papers

No address or paper, except that of the President, and such other addresses and reports as may be deemed desirable by the Council, shall occupy more than twenty minutes in delivery.

Section 3.—Time Length of Discussions

No member, except by unanimous consent, shall speak more than once in the discussion of any paper nor longer than five minutes at any one time.

This by-law shall be printed on all programs of general and section meetings.

Section 4.—Scientific Papers Property of Association

All papers read before this Association shall be its property.

Each paper, when it has been read, shall be deposited with the secretary of the section, by him to be

promptly turned over to the Secretary of the Association.

Section 5.—Scientific Papers Not to Be Published Elsewhere

Authors of papers read before this Association shall not cause them to be published elsewhere except with the consent of the Committee on Publications.

Section 6.—All Meetings of Same Session Shall Be in Same Locality

The general meetings of the Association, the meetings of the House of Delegates, and the meetings of the Scientific Assembly and its sections at any session shall be held in the State of California at the same locality and in buildings as convenient of access, one to the other, as may be possible.

CHAPTER VIII.—ELECTION OF OFFICERS: TERMS

Section 1.—President-Elect—When and How Elected: Term of Office

The House of Delegates at the regular annual session thereof shall elect the President-Elect to serve until the adjournment of the final meeting of the House of Delegates at its next regular annual session. At the conclusion of the final meeting of the House of Delegates at its next regular annual session, such President-Elect shall assume the office of President, and serve as such for the term of one year thereafter, or until his successor assumes office.

Section 2.—Speaker and Vice-Speaker of House—When Elected: Term of Office

The House of Delegates shall at the regular annual session thereof elect a Speaker of the House of Delegates and a Vice-Speaker of the House of Delegates, each to serve for the term of one year, or until their successors are elected and assume office. The Speaker and Vice-Speaker shall be members of the House of Delegates at the time of their election.

Section 3.—Council Appointments to Fill Vacancies in Office

The Council by appointment shall fill any vacancy in office not otherwise provided for in this Constitution or the By-Laws, which occurs during the interval between the annual sessions of the House of Delegates. Such appointee shall serve until the next annual session or until his successor has been elected and has assumed office.

Section 4.—Officers Elected by House of Delegates

Those officers who under the Constitution are elected by the House of Delegates shall be elected at the second meeting of the House at the regular session thereof.

Section 5.—Election of District Councilors

At least twenty-four hours prior to the second meeting at each regular session of the House of Delegates the delegates from those districts in which

Councilor vacancies are about to occur shall separately meet, and in each district the delegates shall elect a chairman and a secretary. At such caucus the delegates in each district shall by nomination, secret ballot and majority vote of the delegates present elect a district Councilor from such district to serve for the ensuing term. The chairman of the district delegation shall then report at the second meeting of the House of Delegates the results of the election, and when such report is made the member elected shall thereupon assume office as a district Councilor. The time and place of the caucus of each district delegation shall, in the absence of unanimous written consent by the delegates from the district fixing time and place, be fixed by the Speaker and announced at the first meeting of the House of Delegates at each regular session. In the event that at any district caucus no person receives a majority vote for district Councilor after repeated ballots, the chairman of the caucus shall report such fact at the second meeting of the House of Delegates and shall also report the names of all nominees submitted to the caucus, whereupon the House of Delegates shall proceed to elect from such nominees the district Councilor from such district.

Section 6.—Employment of Secretary-Treasurer, Assistant Secretaries, Editor and Associate Editors

The Council shall employ a Secretary-Treasurer and an Editor, and, in its discretion, one or more Assistant Secretaries or Associate Editors. The terms of their employment shall be such as are satisfactory to the Council, provided, however, that no contract of employment shall, by its terms, exceed a period of three (3) years from the date of the organization meeting at which such contract is authorized.

Section 7.—Qualifications of Secretary-Treasurer and Editor

No person shall be eligible to the office of Secretary-Treasurer or Editor or Associate Editor who does not hold the degree of Doctor of Medicine, but membership in this Association shall not be a necessary qualification for the offices of Secretary-Treasurer, Editor or Associate Editor.

Section 8.—Election by Ballot; Number of Votes Necessary

All elections of officers shall be by ballot; provided, that by a two-thirds vote of the members present and acting election by ballot may be waived.

A majority of the votes cast shall be necessary to elect any officer, except delegates and alternates to the American Medical Association.

In case no nominee receives a majority of the votes on the first ballot, the nominee receiving the lowest number of votes shall be dropped and a new ballot taken. This procedure shall be continued until one of the nominees receives a majority of all the votes cast, when he shall be declared elected.

Section 9.—Election of Delegates and Alternates to A.M.A.

In case no nominee for delegate or alternate to the House of Delegates of the American Medical Association receives a majority of the votes cast on the first ballot, the nominee receiving the highest number of votes cast shall be declared elected. In case of a tie vote, the tie shall be determined by lot. A separate election shall be held to fill each vacancy, and an alternate shall be specifically elected for each delegate.

Section 10.—When Terms of Office of Speaker, Vice-Speaker and Councilors Begin

The terms of office of the Speaker and Vice-Speaker of the House of Delegates (which terms are herein generally stated to be one year) and the terms of office of the Councilors (which terms are herein generally stated to be three years) shall commence immediately upon the adjournment of the last meeting of the House of Delegates of the regular session of the Association at which such officers are elected, and shall continue up to the adjournment of the last meeting of the House of Delegates at the annual session of the Association of the year in which the term of office ends.

Section 12.—Officers to Hold Office Until Successors Are Elected and Assume Office

Every officer shall hold office until his successor has been elected and has assumed office either in person or by announcement.

CHAPTER IX.—SCIENTIFIC SECTIONS

Section 1.

(a) *Division of Scientific Work.* The scientific work of the Association shall be divided into fifteen scientific sections, as follows: General Medicine; General Surgery; Pediatrics; Eye, Ear, Nose and Throat; Urology; Anesthesiology; Obstetrics and Gynecology; Radiology; Industrial Medicine and Surgery; Pathology and Bacteriology; Dermatology and Syphilology; Neuropsychiatry; General Practice; Public Health; and Allergy.

(b) *Additional Scientific Sections; How Authorized.* Additional scientific sections or regrouping of existing scientific sections can through proper resolution be authorized by the House of Delegates.

(c) *Rules of Procedure of Scientific Sections.* Each scientific section shall adopt rules of procedure for its own better government and work. Its officers shall be responsible for the proper keeping of records of scientific and business meetings.

(d) *Officers of Sections.* The members of each section shall at the regular annual session of the Association elect a chairman and a secretary to serve for the term of one year.

(e) *Program.* Each of the sections shall present a scientific program at the annual session of the Association, and its officers shall be responsible for the proper preparation of the same, and for the

proper cooperation with other scientific sections during the annual meeting.

CHAPTER X.—FUNDS, PROPERTY AND ASSESSMENTS

Section 1.—Reduction of Dues

The House of Delegates may reduce annual dues of active members, as follows:

(a) Those active members who have been in the practice of medicine for less than one year (on the first day of the calendar year for which such dues are payable), may be reduced to one-fourth regular dues;

(b) Those active members who have been in the practice of medicine for less than two years (on the first day of the calendar year for which such dues are payable), may be reduced to one-half regular dues;

(c) Those active members who have been in the practice of medicine for less than three years (on the first day of the calendar year for which such dues are payable), may be reduced to three-fourths regular dues.

Dues payable by associate members shall be uniform and equal but may be set at not less than one-half the regular dues for active members.

Section 2.—Annual Dues and Assessments

(a) *When Payable.* The annual assessment or dues shall be payable on or before January 1 of the year for which they are levied.

(b) *County Secretaries to Collect Dues.* The secretary of each component society shall cause to be collected and shall forward to the office of the Association the dues and assessments for its members.

(c) *Record of Fact of Payment of Dues.* The record of payment of dues and assessments on file in the office of the Association shall be final as to the fact of payment by a member and as to his right to participate in the business and proceedings of the Association and of the House of Delegates.

(d) *Dues of New Members; Amount Payable.* All doctors of medicine becoming active members of this Association under the provisions of Section 1 of Chapter II of these By-Laws shall, as provided in Section 1 of Chapter II, pay to this Association the annual dues payable by active members for the period for which membership is obtained, except that the Council may, in its discretion, with respect to all new members who acquire membership after July 1 in each year, require payment of only one-half of the annual dues for said year. Such payment shall entitle such new member to all the rights of active membership in this Association until the end of the current calendar year.

Section 3.—Bequests, Legacies, Donations and Gifts

The Association may receive through the Council or for the benefit of the Association through any corporation which may be formed pursuant to the

Constitution, such bequests, legacies, donations and gifts as the Council shall deem it proper and suitable to accept.

Section 4.—Funds and Moneys; Deposit and Withdrawal

All funds and moneys of the Association by whomsoever received shall be promptly forwarded to the Secretary-Treasurer of the Association and deposited by him in a depositary of the Association.

No demands or claims against the Association shall be paid and no funds or moneys of the Association withdrawn from any depositary thereof except upon written voucher approved by the signature of at least two members of the Auditing Committee or by a majority vote or written approval of a majority of all the members of the Executive Committee on check or draft signed by any two of the following: the Chairman of the Council; the Vice-Chairman of the Council (only in the absence of the Chairman); Chairman of the Auditing Committee; the Secretary-Treasurer.

Section 5.—Revolving Fund

A revolving fund in such amount as may from time to time be fixed by the Council shall be deposited with the Secretary-Treasurer from which fund immediate cash demands may be paid.

Section 6.—Surplus Funds From Journal and Publications

On authorization therefor by the House of Delegates or the Council, any surplus funds arising from the operation of the official journal or other publications of the Association may be applied and used for any purposes deemed suitable or may be delivered and paid over to any corporation which may be formed pursuant to Article VIII, Section 1, of the Constitution.

CHAPTER XI.—REFERENDUM AND PETITION

Section 1.—Reference of Resolutions to Vote of Members

The House of Delegates may at any time, by a majority vote of those present, refer any resolution or motion pending before it to all of the active members of the Association for their vote for or against such resolution or motion. The Council may, by a two-thirds vote of all of its members and at any time within thirty (30) days after action was taken, refer any resolution or motion adopted by the House of Delegates to all of the active members of the Association for their vote for or against such resolution or motion. In addition, the Council may at any time, by a two-thirds vote of all of its members, submit any resolution or motion pending before it to all of the active members of the Association for their vote for or against such resolution or motion.

Section 2.—Form of Referendum: Arguments

The body referring any resolution or motion to the active members of the Association may, in the

motion of reference, determine the form of the question to be submitted. In the event the motion of reference does not determine the form of the question to be submitted, then the form thereof shall be fixed and determined by the Council. Written arguments for and against the resolution or motion, not exceeding 1000 words each, may be submitted by any member of the Association to the presiding officer of the referring body within fifteen (15) days of the vote of reference. Such presiding officer may choose one argument on each side and same shall then be printed and mailed with the ballots.

Section 3.—Manner of Voting; Time of Voting; Canvass

All references to the membership under this article shall be by mail ballot. The time within which each member shall cast his vote may be fixed in the motion of reference, and if not so fixed shall be fifteen days from the date of mailing ballots. Each vote must be in writing and the same must be placed in a sealed envelope bearing on the corner thereof the name of the voter. The envelope shall be mailed or delivered to the Secretary's office. The canvass thereof shall be made by a committee on referendums to be appointed, in the case of reference by the House of Delegates by the Speaker of the House, and in the case of reference by the Council by the Chairman of the Council. The Secretary shall deliver to such committee all ballots timely received, and the committee shall canvass the vote and report the results thereof immediately to the Secretary.

Section 4.—Effect of Referendum

To be considered adopted, any resolution or motion submitted to the membership by referendum shall require the same proportionate affirmative vote of those voting that such resolution or motion would have required to be adopted by the body (House of Delegates or Council) from which such resolution or motion was referred. Any resolution or motion submitted to a referendum and adopted shall have the same force and effect as though adopted in the body from which it was referred, and shall be considered as having been so adopted by such body. A referendum shall not be effective or binding unless a majority of the active members vote thereon.

Section 5.—Petitions

Any 100 active members or any component society may petition the House of Delegates or Council on any matter and such petition must thereupon be heard and considered at the next ensuing regular meeting of such body.

CHAPTER XII.—MISCELLANEOUS

Section 1.—Ethics

The principles of medical ethics as promulgated from time to time by the American Medical Association and by the California Medical Association are

and shall be the principles of medical ethics of this Association and the component societies thereof, and shall regulate and govern all members thereof.

Interpretation of ethics about which any controversy may arise or exist shall be submitted to the Council of this Association, and its interpretation and ruling thereon shall be final.

Section 2.—Rules of Order

In the absence of any provision in the Constitution or these By-Laws, all meetings of the Association, of the House of Delegates, of the Council, and of committees shall be governed by the parliamentary rules and usages contained in the current edition of Roberts' "Rules of Order."

In Memoriam

AUDRAIN, LESLIE CARL. Died June 20, 1949, aged 74. Graduate of Rush Medical College, 1907. Licensed in California in 1922. Dr. Audrain was a retired member of the Los Angeles County Medical Association, and the California Medical Association.



HARVEY, ANDREW MAGEE. Died in Pasadena, July 18, 1949, aged 81, of generalized carcinoma. Graduate of the University of Illinois College of Medicine, Chicago, 1893. Licensed in California in 1942. Dr. Harvey was an associate member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.



JOHNSTONE, KRISTINE BLICHERT. Died in Napa, May 31, 1949, aged 79, of heart disease. Graduate of Loyola University School of Medicine, Chicago, 1917. Licensed in California in 1922. Dr. Johnstone was a retired member of the Napa County Medical Society, and the California Medical Association.



MILLER, LOVINA RUTH MERRITT. Died in Sanitarium, California, April 25, 1949, aged 75, of coronary thrombosis.

CHAPTER XIII.—AMENDMENTS

Section 1.—Amendments—Vote and Procedure

These By-Laws may be amended by the House of Delegates at any meeting of any session thereof by the affirmative vote of at least two-thirds of the qualified members thereof present and acting; provided, that any proposed amendment has been submitted in writing to the House of Delegates at least twenty-four hours previous to being voted upon.

CHAPTER XIV.—REPEAL OF ALL EXISTING BY-LAWS

Section 1.—Repeal of Existing By-Laws

All chapters and all sections and parts of all chapters of the existing By-Laws of this Association are hereby repealed.

Graduate of the American Medical Missionary College, Battle Creek, 1901. Licensed in California in 1936. Dr. Miller was a member of the Napa County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.



POLLAK, ALOIS. Died in Los Angeles, July 17, 1949, aged 47, of cerebral hemorrhage. Graduate of Leopold-Franzens Universität Medizinische Fakultät, Innsbruck, 1926. Licensed in California in 1940. Dr. Pollak was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.



SELIGMAN, LEWIS LIPMAN. Died in Dinuba, July 9, 1949, aged 55, of coronary thrombosis. Graduate of the University of California Medical School, Berkeley-San Francisco, 1917. Licensed in California in 1917. Dr. Seligman was a member of the Tulare County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.



SIMONDS, PAUL EDWARD. Died in Riverside, July 10, 1949, aged 72, of a cerebral hemorrhage. Graduate of the University of Southern California School of Medicine, Los Angeles, 1908. Licensed in California in 1909. Dr. Simonds was a member of the Riverside County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.



NEWS and NOTES

NATIONAL • STATE • COUNTY

LOS ANGELES

Dr. Riojun Kinoshita of Japan, chief of cancer research at Osaka University Medical School, recently arrived in Los Angeles where he will do research work for one year with the assistance of the School of Medicine of the University of California at Los Angeles and the Veterans Administration. Dr. Kinoshita is being financed by a \$10,000 U.S. Public Health Service fellowship.

MERCED

Dr. James A. Parker of Merced has been appointed by the Merced County Board of Supervisors to fill the newly created position of medical director of the county hospital.

SONOMA

Dr. Owen Thomas of Santa Rosa has been appointed technical director of the recently organized Sonoma County Community Blood Bank. Dr. Owen will be assisted by a blood bank committee of physicians to be appointed from the membership of the Sonoma County Medical Society.

GENERAL

The following memorandum from **Dr. George F. Lull**, secretary-general manager of the American Medical Association, was received last month by the California Medical Association:

"As of July 28, 1949, our records show that your Association had remitted 85 per cent of the \$25 assessment. Its relative standing in per cent collected among the 53 constituent societies was 1."

* * *

The California Society of Anesthesiologists has constituted a **Committee on Fires and Explosions** whose function is advisory to individuals in an effort to lessen the potential sources of such accidents. Inquiries for advice may be addressed to the chairman of the committee, John B. Dillon, M.D., 1200 N. State Street, Los Angeles.

* * *

Dr. Frank F. Tallman, one-time director of mental hygiene for the state of Michigan and more recently (1944-47) for Ohio, has been appointed director of mental hygiene for California by Governor Earl Warren. **Dr. Lawrence Kolb**, who has been serving as acting director since the resignation last March of Mrs. Dora Shaw Heffner, will resume his duties as deputy medical director when Dr. Tallman takes over the post in September.

The appointment of Dr. Tallman was made on the recommendation of a special committee composed of the deans of five California medical schools—Dr. Loren Chandler of Stanford, Dr. Stafford Warren of the University of California at Los Angeles, Dr. B. O. Raulston of the University of Southern California, Dr. George Harding of the College of Medical Evangelists, and Dr. Francis S. Smyth of the University of California, San Francisco.

Two grants to teaching institutions in California for research on mental and nervous disorders and five for training personnel in psychiatry, neurology, clinical psychology, psychiatric nursing and psychiatric social work have been announced by the Federal Security Administration. All grants were approved by Surgeon General Leonard A. Scheele of the Public Health Service, upon recommendation of the National Advisory Mental Health Council. The research grants are: University of California, \$13,392 for "Exploration of social situations used in psychotherapy," under the direction of Dr. Karl M. Bowman and Dr. Jurgen Ruesch; \$11,934 for "Personality development from birth to maturity (The Guidance Study)," under the direction of Dr. Jean Walker MacFarlane.

Training grants were allotted as follows: University of California (Berkeley), \$119,007; University of California (Los Angeles), \$10,770; Los Angeles Institute for Psychoanalysis, \$9,720; University of Southern California, \$35,930; Stanford University, \$22,912.

* * *

"The American College of Radiology views with alarm and dismay all proposed programs relating to the distribution of medical services which place the diagnostic aspects of medicine in a category apart from the general practice of medicine," according to a letter sent by that organization to members and to others in the profession of medicine. The letter pointed out that "the convening of the 81st Congress brought forth a number of legislative programs so worded. Examples are: S.5, the original Wagner-Murray-Dingell bill; S.1679, the Thomas-Murray-Dingell bill; S.1106, the Lodge bill; S.1456, the Hill bill; and S.1907, the Flanders-Ives bill. The treatment of diagnostic medicine under these legislative schemes has varied all the way from pin-point socialization under S.1106 and classified as a hospital service in S.1907 to socialization in common with all of medicine but under the separate category of "Auxiliary Services" in S.5 and S.1679.

"In addition to this legislation," the letter continues, "not a few prominent members of the medical profession have recently promulgated similar plans emphasizing a difference in what they have termed 'the practice of diagnostic specialties' and the practice of medicine. The American College of Radiology is most disturbed by these medical spokesmen in that they have apparently seen in the socialization of diagnostic medicine relief from demands for socialization of all medicine. Theirs is a tragic error. The medical profession and most of the rest of the nation have come to understand that **medicine cannot and will not be socialized in a vacuum**. The socialization of any group, or segment of a group, is but a precursor of things to come. Medicine must not weaken its stand for freedom by partial appeasement and thus fall victim to piecemeal socialization. Abraham Lincoln observed that 'No nation can long endure half slave and half free.' It should be even more obvious that no profession can permanently maintain this imbalance."

* * *

The officers and committeemen of the **California Academy of General Practice** held a business meeting in Fresno, July 24, 1949. Thirty-five members of the Academy

attended. Major problems discussed included means of extending postgraduate education to the general practitioner and expansion of general practice sections in all hospitals. A vehement stand was taken against the adoption of President Truman's proposal to form a new Cabinet department with Oscar Ewing as its secretary. Recommendation of the Hoover report was approved as a better alternative.

The 1949 officers of the Academy, who were elected at the meeting of the California organization in Los Angeles on May 11, 1949, are as follows: President, Frederick Ewens, Manhattan Beach; vice-president, Dave F. Dozier, Sacramento; secretary-treasurer, Francis T. Hodges, San Francisco; directors, James Reeves, San Diego, James Raphael, Oakland, and Clarence Halburg, Redlands.

It has been announced that the First Scientific Assembly of the California Academy of General Practice will be held November 6 and 7, 1949, in Santa Barbara.

* * *

National Heart Institute grants of \$74,544 to support heart disease research work in medical schools and hospitals in California were announced recently. A list of the seven projects and the names of the supervisors of each follows:

University of California, John J. Eiler, "Influence of hypnotics and metabolic stimulants on the rate and efficiency of aerobic phosphorylation in preparation of rat heart and brain"—\$6,021.

University of California, John H. Lawrence, "Pathologic physiology of polycythemia vera and its relation to vascular diseases"—\$10,476.

Scripps Metabolic Clinic, Eaton M. MacKay, "Factors concerned in the excretion of salt and water by man"—\$18,651.

Institute for Medical Research, Cedars of Lebanon Hospital, R. W. Lippman, "An experimental investigation into the mechanism and nature of proteinuria"—\$5,000.

University of Southern California, Douglas R. Drury, "The mechanism of production of chronic experimental hypertension"—\$10,000.

University of Southern California, Clinton H. Thienes, "Action of drugs and metabolites on isolated normal and experimentally damaged hearts"—\$10,000.

Stanford University, John A. Luetscher, Jr., "Continued study of factors regulating renal excretion of sodium"—\$14,396.

* * *

The International College of Surgeons, United States chapter, will hold its fourteenth Annual Assembly and Convocation in Atlantic City, New Jersey, November 7-12. The program will include scientific sessions on subjects in the fields of general surgery; eye, ear, and nose and throat surgery; gynecology and obstetrics; urology; and orthopedic, thoracic, plastic and neurological surgery, as well as special surgical clinics held in Philadelphia hospitals on November 7. All doctors of medicine are invited to attend. Programs may be obtained from Arnold S. Jackson, M.D., secretary, Jackson Clinic, Madison 4, Wisconsin.

* * *

The National Gastroenterological Association will hold its 14th Scientific Session in Boston, October 24-26, 1949. Immediately following the convention, October 27-28, the Association is sponsoring a course in gastrointestinal surgery at the Boston City Hospital. Further information concerning the program and details of the course may be obtained by writing to the Secretary, National Gastroenterological Association, 1819 Broadway, New York 23, N. Y.

Programs of two postgraduate SYMPOSIA ON HEART DISEASE, one to be held October 12-15 by the Heart Division of the San Francisco Tuberculosis Association, the other October 18 and 19 by the Los Angeles Heart Association, are as follows:

TWENTIETH ANNUAL POSTGRADUATE SYMPOSIUM ON HEART DISEASE

October 12-15, 1949, St. Francis Hotel, San Francisco

Wednesday, Morning, October 12

9:00 A.M.-12:00 M., Colonial Ballroom

COURSES IN ELECTROCARDIOGRAPHY

(Please register in advance indicating whether you wish the elementary or more advanced course)

Participants: Francis L. Chamberlain, M.D., Francis Rochex, M.D., John J. Sampson, M.D., Robert L. Smith, Jr., M.D., Maurice Sokolow, M.D., Clarence M. Tinsley, M.D.

Wednesday Afternoon, October 12

1:30 P.M.-5:00 P.M., Colonial Ballroom

SESSIONS ON HEART DISEASE IN CHILDREN

Sponsored by the American Academy of Pediatrics, Northern California

Presiding: Hartzell H. Ray, M.D.

President, Northern California Pediatric Society

1:30 P.M.-4:00 P.M.—What the Pediatrician Should Know About Childhood Heart Disease, with Special Emphasis on Newer Diagnostic Procedures—A Panel Discussion.

Moderator: John A. Anderson, M.D.

Participants:

Mary B. Olney, M.D.—Clinician's Viewpoint

Henry S. Kaplan, M.D.—Roentgenology

Maurice Sokolow, M.D.—Electrocardiography

Sanford Leeds, M.D.—Cardiac Catheterization

Questions and Answers—Send questions in advance to Heart Division Office).

4:00 P.M.-4:15 P.M.—Recess.

4:15 P.M.-4:45 P.M.—The Pathogenesis of Rheumatic Fever—Arnold R. Rich, M.D.

Wednesday Evening, October 12

8:00 P.M., Colonial Ballroom

Presiding: William J. Kerr, M.D.

Studies on the Pathogenesis of the Collagen-Vascular Diseases—Arnold R. Rich, M.D.

Nature of the Auricular Arrhythmias, an Electrocardiographic and Cinematographic Study—Myron Prinzmetal, M.D.

(This session is held in collaboration with the Medical Extension (University Extension), University of California Medical School, as one feature of a postgraduate series of twelve evening lectures in general medicine.)

Thursday Morning, October 13

9:00 A.M.-12:05 P.M., Colonial Ballroom

Presiding: David A. Rytand, M.D.

9:00 A.M.-11:00 A.M.—Clinical Conference—Presentation of Selected Cases of Cardiovascular Problems with Discussion of Diagnosis and Management—Guest speakers will participate.

11:00 A.M.-11:15 A.M.—Recess.

11:15 A.M.-12:05 P.M.—Sodium Depletion, Its Indications, Hazards, and Techniques—William Dock, M.D.

Thursday Afternoon, October 13

1:30 P.M.-4:50 P.M., Colonial Ballroom,
St. Francis Hotel

Presiding: Richard D. Friedlander, M.D.

1:30 P.M.-2:15 P.M.—Clinical - Pathological Conference—
William Dock, M.D., Arnold R. Rich, M.D.
2:15 P.M.-2:30 P.M.—Recess.

**SYMPOSIUM ON CHRONIC RHEUMATIC VALVULAR
HEART DISEASE**

2:30 P.M.-2:55 P.M.—Pathology of Valvular Heart Disease
—Gerson R. Biskind, M.D.
2:55 P.M.-3:20 P.M.—Clinical Aspects and Course of Rheumatic Heart Disease—Harold Rosenblum, M.D.
3:20 P.M.-3:35 P.M.—Recess.
3:35 P.M.-4:00 P.M.—Physical Diagnosis of Valvular Heart Disease—Clayton D. Mote, M.D.
4:00 P.M.-4:25 P.M.—Hemodynamics of Valvular Heart Disease—J. K. Lewis, M.D.
4:25 P.M.-4:50 P.M.—Management of the Patient—Charles A. Noble, Jr., M.D.

Friday Morning, October 14

9:00 A.M.-12:00 M., Colonial Ballroom

Presiding: Edwin L. Bruck, M.D.

9:00 A.M.-9:25 A.M.—The Relationship of Trauma to Heart Disease—William W. Newman, M.D.
9:25 A.M.-9:50 A.M.—The Newer Drugs Affecting the Autonomic Nervous System—Windsor Cutting, M.D.
9:50 A.M.-10:00 A.M.—Recess.
10:00 A.M.-10:25 A.M.—The Effect of Anti-luetic Therapy Upon Luetic Heart Disease—Charles W. Barnett, M.D.
10:25 A.M.-10:50 A.M.—Chairman's Address—"The Normal Heart"—Arthur Selzer, M.D.
10:50 A.M.-11:05 A.M.—Recess.
11:05 A.M.-12:00 M.—Adrenal and Cardiac Factors in Circulatory Failure in Acute Infections—Arnold Rich, M.D.

Friday Afternoon, October 14

1:30 P.M.-4:30 P.M., Colonial Ballroom

Presiding: Marlow B. Harrison, M.D.

1:30 P.M.-2:20 P.M.—The Clinical Value of Recording the Motion of the Heart and Blood—William Dock, M.D.
2:20 P.M.-2:30 P.M.—Recess.

SYMPOSIUM ON CORONARY DISEASE

2:30 P.M.-2:55 P.M.—Pathogenesis of Coronary Disease—
Dwight L. Wilbur, M.D.
2:55 P.M.-3:25 P.M.—The Dynamics of Myocardial Infarction—Myron Prinzmetal, M.D.
3:25 P.M.-3:40 P.M.—Recess.
3:40 P.M.-4:05 P.M.—The Course of Coronary Disease—
Maurice Eliasen, M.D.
4:05 P.M.-4:30 P.M.—Problems of Diagnosis of Myocardial Infarction—Lester Lipsitch, M.D.

Friday Evening, October 14

7:00 P.M., Colonial Ballroom

Twentieth Annual Dinner Meeting

Presiding: Arthur Selzer M.D., Chairman
Election of Officers

The Management of Coronary Disease—William Dock, M.D.
(Green Room open at 6:00 P.M. for cocktails)

Saturday Morning, October 15

9:00 A.M.-12:00 M.

San Francisco Hospital, Ward P
Potrero Avenue and 22nd Street

Presiding: J. Marion Read, M.D.

Presentation of Patients with Various Types of
Heart Disease

Discussants: William Dock, M.D., and Arnold R. Rich, M.D.

LOS ANGELES HEART ASSOCIATION

October 18 and 19, 1949, Wilshire-Ebell Theatre, Los Angeles

Tuesday Morning, October 18

9:00 A.M. to 12:00 Noon

Catheterization of the Heart—George C. Griffith, M.D., Pasadena.

The Unipolar Electrocardiogram—William Paul Thompson, M.D., Los Angeles.

The Clinical Use of Angiocardiography—Charles R. Baker, M.D., Los Angeles.

Electrokymographic and Ballistocardiographic Records of the Motion of the Heart and Blood—William Dock, M.D., Brooklyn, N. Y.

Questions and Discussion.

Tuesday Afternoon, October 18

2:00 P.M. to 4:30 P.M.

Pathogenesis of the Collagen Vascular Diseases—Arnold R. Rich, M.D., Baltimore, Md.

Causes of Death in Reporting of Heart Disease—Representative—USPHS.

Choice of Anesthesia in Heart Disease—Forrest E. Leffingwell, M.D., Los Angeles.

Practical Problems in the Treatment of Ischemia of the Lower Extremities—Vernon P. Thompson, M.D., Los Angeles.

Recognition of Cardiac Arrhythmias—Thomas H. Brem, M.D., Van Nuys.

Treatment of Cardiac Arrhythmias—John Martin Askey, M.D., Los Angeles.

Tuesday Evening, October 18

7:00 P.M.

Dinner Meeting, Ambassador Hotel

William Dock, M.D., Speaker

Wednesday Morning, October 19

9:30 A.M. to 12:00 Noon

Adrenal and Cardiac Factors in Circulatory Failure During Acute Infections—Arnold Rich, M.D.

Indications for Sympathectomy—Maurice Rosenfeld, M.D., Los Angeles.

Presidential Address—Lewis T. Bullock, M.D., Los Angeles. Heart Failure, an Adaptation to Reduced Cardiac Output—William Dock, M.D.

Wednesday Afternoon, October 19

2:00 P.M. to 4:30 P.M.

The Cardiac Effect of Norepinephrine and Related Compounds—Morris H. Nathanson, M.D., and Harold Miller, M.D., Los Angeles.

Experiences in the Use of Low Sodium Diets Other Than the Rice Diet—Morley J. Kert, M.D., Los Angeles.

Sodium Depletion; Its Indications, Results and Hazards—William Dock, M.D.

Clinical-Pathological Conference—William Dock, M.D., and Arnold Rich, M.D.

POSTGRADUATE EDUCATION NOTICES

University of California, Los Angeles

Course: 1. Surgical Anatomy.
 Date: September 19 through December 17, 1949.
 Fee: \$100.00.
 Meeting Place: Los Angeles Medical Department.
 Course: 2. Therapy of Metabolic and Endocrine Disorders.
 Date: September 28 through December 7, 1949.
 Fee: \$50.00.
 Meeting Place: General Medical and Surgical Hospital, Veterans Administration Center, Los Angeles 25.
 This course will consist of 13 evening presentations, stressing therapy.
 Course: 3. Recent Advances in Obstetrics and Gynecology.
 Date: October 3-7, 1949. Class will meet six hours per day.
 Meeting Place: General Medical and Surgical Hospital, Veterans Administration Center, Los Angeles 25. Fee: \$50.00.
 Course: 4. A series of lectures in the Basic Sciences as Applied to Bone and Joint Surgery will be sponsored by the Division of Orthopedic Surgery, General Medical and Surgical Hospital, Veterans Administration Center, Los Angeles, and the Orthopedic Hospital of Los Angeles. The complete series will extend over a two-year period, with a total of 40 lectures, 20 sessions per year.
 Contact: Office of Medical Extension, University Extension, University of California, Los Angeles 24, California.

The California Chapter of the American College of Chest Physicians

Courses in Diseases of the Chest.
 In cooperation with University of California Medical School and Stanford University School of Medicine.
 Date: December 5 through 9, 1949.
 Contact: Stacy R. Mettier, M.D., Medical Extension, University of California Medical Center, San Francisco 22, California. Fee and printed program supplied on requests including veterans.

American College of Physicians

Course: The Physiological Approach to Clinical Problems in Cardiovascular Diseases.
 Contact: George C. Griffith, M.D., F.A.C.P., Director; University of Southern California School of Medicine, Los Angeles 33, California.
 Fees: \$30.00, A.C.P. members and V.A. (P.L. 346), \$60.00 non-members.

Graduate School of Medicine, College of Medical Evangelists

Courses offered in Anesthesiology, Acute and Chronic Thoracic Diseases, General Medicine,

Traumatic Surgery, Physical Therapy, Surgical Anatomy, Otolaryngology, Genito-Urinary Diseases and Diseases of the Kidneys during the period from September 27 to December 20, 1949. Details of the various courses may be obtained by writing for the special brochure.

Contact: H. M. Walton, M.D., Dean, Graduate School of Medicine, College of Medical Evangelists, 312 No. Boyle Avenue, Los Angeles 33, California.

California Heart Association—1949 Symposium

Guest speakers will be Dr. William Dock, professor of medicine, Long Island College of Medicine, Brooklyn, and Dr. Arnold R. Rich, department of pathology, Johns Hopkins University, Baltimore. Contact: California Heart Association, 42 Second Street, San Francisco 5, California.

Dates: San Francisco: October 12 through 15, 1949. Los Angeles: October 18 and 19, 1949.

Stockton Postgraduate Study Club

Meetings will be held in the Lecture Hall, Stockton State Hospital, in the Psychopathic Hospital Building on Magnolia Street.
 September 15 (Thursday), 8 p.m.—"Pharmacology in Changing World," by Dr. Torald Sollmann, Professor Emeritus of Pharmacology and Materia Medica, and Dean Emeritus of the Medical College, Western Reserve University, Cleveland, Ohio.

September 22 (Thursday), 8 p.m.—"Carcinoma of the Oral Cavity and Face," by Dr. Harry Glenn Bell, Professor of Surgery at the Medical School, University of California.

September 29 (Thursday), 8 p.m.—"Peptic Ulcer: Treatment with the Anti-Peptic Ulcer Dietary Factor," Dr. Garnett Cheney, Clinical Professor of Medicine, Stanford University Medical School.

October 13 (Thursday), 8 p.m.—"Coccidioidomycosis with Special Emphasis on Clinical Aspects," Dr. Charles Edward Smith, Professor of Public Health, School of Public Health, University of California.

October 20 (Thursday), 8 p.m.—"Common Benign Diseases of the Rectum and Anus," Dr. Walter Birnbaum, Assistant Clinical Professor of Surgery, Medical School, University of California.

October 27 (Thursday), 8 p.m.—"Clinical Allergy—Its Diagnosis and Treatment," Dr. Albert H. Rowe, Lecturer in Medicine and Allergist, Medical School, University of California.

November 17 (Thursday), 8 p.m.—"Surgical Diseases of the Biliary Tract," Dr. Wm. Longmire, Jr., Chairman Department of Surgery of School of Medicine, University of California at Los Angeles.

December 8 (Thursday), 6:30 p.m.—Annual Dinner Meeting (place to be announced). "Recent Developments in Virus Diseases and Their Treatment," Dr. Karl F. Meyer, Director of Hooper Institute Foundation for Medical Research.

INFORMATION

Medical Aspects of Parathion Insecticide

The group of insecticides known as organic phosphates has come into widespread use in the past few years, and because of their efficiency as economic poisons will undoubtedly be encountered more frequently. A previous bulletin described the pharmacology and toxicology of hexaethyl tetraphosphate and tetraethyl pyrophosphate, two compounds of this group. The present article is concerned with a third member, parathion (O, O-diethyl-O-P-nitro-phenyl-thiophosphate) which is equally toxic and potentially hazardous if improperly handled.

During the past year (1948-1949) the Bureau of Adult Health has received reports of seven cases of parathion poisoning occurring in California. Undoubtedly there have been others which were not reported. Three parathion deaths and one near fatality have recently been reported in the East. Since parathion (also commercially known as Thiophos) has only recently come into widespread use, symptoms of its toxicity may not be familiar to all physicians who are encountering cases, and possibly cases have occurred in which the true etiology has been unrecognized.

Parathion is a deep brown liquid of low vapor pressure, some samples of which possess a characteristic odor. It is slightly soluble in water, but is completely miscible in many organic solvents including ethers, alcohols, and animal and vegetable oils. It is stable in a neutral solution but is rapidly hydrolyzed in the presence of alkalies, including soap. In actual application as an insecticide, the material may be used as a wettable powder or a dust.

Cases of poisoning have occurred in people engaged in the manufacture of the material, in those compounding solutions, in agricultural workers applying it, and even in people who have unwittingly come in contact with it. An example of the last is the case of a welder who cut into a pipe containing parathion and developed symptoms of poisoning ten minutes later.

Absorption—In experimental animals it has been demonstrated that parathion is readily absorbed through the skin and from the respiratory and digestive tracts. Almost all clinical cases of poisoning have occurred as a result of absorption through the skin or respiratory tract, and symptoms have appeared within a very brief period after exposure, indicating rapid uptake by the body. In some cases, local dermatitis has been observed at the site of contact. If the material should be splashed in the eye, there is an intense miosis, resulting in temporary blindness.

From the Bureau of Adult Health, State of California
Department of Public Health.

Pharmacology—The principal mode of action of parathion is the inactivation of the enzyme cholinesterase. This enzyme, present in blood and nervous tissue, destroys acetylcholine, and in its absence the accumulation of acetylcholine results in excessive parasympathetic nervous system activity. This muscarine-like effect is the underlying cause of the multitude of symptoms which has been recorded by various writers throughout the country.

Signs and Symptoms—Observed cases have varied from those showing mild, transient symptoms to those with severe toxemia resulting in death. Early signs and symptoms include headache, nausea, vomiting, dizziness, cramps, and constriction of the pupils. More severe poisoning is manifested by a feeling of tightness of the chest, difficulty in breathing, fibrillary twitching of the voluntary muscles, convulsions, pulmonary edema, and coma. There may also be diarrhea which may be bloody. Death results from a combination of pulmonary edema and congestion and edema of the brain.

Destruction of cholinesterase, producing the parasympathetic stimulation, results in smooth muscle spasm, excessive bronchial secretion, and capillary dilatation. Evidence concerning chronic toxicity and cumulative action is incomplete. However, studies are now under way to determine the effect of chronic exposure to dosages below those producing acute effects. It may possibly be that with chronic exposure, an irreversible destruction of cholinesterase can be produced.

Diagnosis—Accurate diagnosis depends upon obtaining a history of exposure to parathion. A high index of suspicion should be maintained, especially in agricultural areas where the material is most commonly used. However, cases have also occurred in the cities, especially among workers engaged in manufacture or formulation of the insecticide. Any patient who may have come in contact with parathion, and who complains of headache, dizziness, nausea, or blurred vision, should be suspected of suffering from acute poisoning. A lowered blood cholinesterase is confirmatory evidence. Ten cc. of citrated blood is necessary for this test, and the Bureau of Adult Health will run samples provided by any physician in California. Instructions regarding the preparation and mailing of specimens will be sent on request.

Treatment—Atropine is a specific therapeutic agent against the parasympathetic nervous system stimulation. Therapeutic doses (1/75 to 1/100 of a grain) should be administered early and frequently as indicated. Magnesium sulfate counteracts the hyperactivity of the myoneural junction and 10

to 20 cc. of a 10 per cent solution given slowly intravenously should be used in conjunction with atropine. At the earliest sign of pulmonary edema, oxygen is indicated and may be life-saving when administered early. Positive pressure may also be of value (oxygen under pressure of 4 to 6 mm. of water) in the treatment of pulmonary edema.

Prevention—Poisoning by this compound can be prevented if proper attention is given to safe methods of handling it and if all persons concerned appreciate its extreme toxicity. All contact with the bare skin must be avoided and rubber covered cotton gloves must be worn when handling parathion. If any of the material gets on the skin it should be thoroughly washed off with copious amounts of soap and water. Workmen should be provided with freshly laundered coveralls and should wear fresh clothing each day, including socks and underwear. Inhalation should be avoided by use of a chemical cartridge respirator approved by the U. S. Bureau of Mines. Workers should bathe with soap and water after using the material, and contamination of food and tobacco should be avoided. Any exposed person developing symptoms

should immediately be removed from the exposure and seen by a physician.

Bureau of Adult Health—Physicians are urged to report cases of poisoning from insecticides to the Bureau of Adult Health, 2002 Acton Street, Berkeley 2, California. The Bureau's personnel and facilities are available to physicians for assistance in the diagnosis and prevention of these cases.

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BOOK REVIEWS

FUNDAMENTAL CONSIDERATIONS IN ANESTHESIA. By Charles L. Burstein, M.D., Chief, Department of Anesthesiology, Hospital for Special Surgery, Veterans Administration Hospital, N. Y. The Macmillan Company, New York, 1949. \$4.00.

This book is well titled. It contains information on pharmacology, physiology and physiopathology as related to clinical anesthesia with which everyone administering anesthetics should be familiar.

Under the heading of Circulatory Disturbances, shock, celiac plexus reflex, carotid sinus reflex, cardiac arrhythmias and the changes of blood pressure under spinal anesthesia are each briefly explained and a method to avoid these complications or treat them when they do occur is suggested.

The book is clear, concise and fundamentally sound and can be recommended to everyone interested in anesthesiology.

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THE STORY OF MEDICINE. By Joseph Garland, M.D., Houghton Mifflin Company, Boston, 1949. \$2.75.

Most books dealing with the history of medicine were written primarily by professional historians for the student of history and therefore ordinarily are not within the reading sphere of the average man. Besides, often they are weighty tomes of the reference type not to be read just casually. Joseph Garland, pediatrician and editor of the *New England Journal of Medicine*, evidently felt the need for something more easily read but still adequately informative and sufficiently exciting to hold the reader. And so he has told the great story of the development of medicine in a conversational style all of his own that is most attractive and certainly sufficiently exciting to invite the reader to peruse the book more than once. I did so, and I enjoyed the second reading even more than the first although your reviewer flatters himself to be thoroughly conversant with the history of medicine.

The real value of Garland's book is not only that it can be read with pleasure by anybody but that it also is the kind of history that the medical student as well as the busy practitioner can read with considerable profit. Neither students nor practitioners ordinarily have the time, or make the time, or have the inclination to delve into the learned treatises written by our outstanding historians. The result has been that most practitioners of medicine have forgotten much, if not all, of what has made medicine great through the centuries. Now here is a chance to refresh one's memory with the reading of the exciting events that led up to the shaping of modern medicine without having to struggle with involved sentences and the endless references of the larger works on the subject.

You will enjoy reading about the talkative inquisitive men who build up great theories on the basis of little fact and how they attempted to understand something beyond the boundaries of their knowledge, just as some of our supposed wisdom of the present will some time be proved false and must be replaced. And therewith the author leads you from ancient times through the thinking of the Greek and Roman medical men on to the medicine of the Moslem Empire and into the Christian era. He tells you what transpired at the medieval universities where after three years of logic the student spent from five to seven years to make himself proficient in the Art of Healing. He tells of the days of the great plagues and the suffering they brought to the mankind of that day. He tells you of the days of the rebirth of intellectual curiosity in men's minds that came with the dawning of the Renaissance and that ultimately brought forth the great men of Padua, Bologna and Paris and such mental giants as Harvey and Vesalius. And so he unfolds

the story of medicine by telling of great men and lesser men, modest men and vain men, and how they came to know about disease.

It would go too far to tell here about all there is in this book of Garland's. Besides, telling all of it here would take away from the joy of discovering the treasures of information crammed into the few hundred pages of this history of medicine. You will enjoy reading Garland's tale after a hard day's work. It will stimulate your thinking and will relax you. It will make you feel proud of your profession. By all means read this book, Doctor, and then tell your patients about it. They, too, will enjoy reading it and no doubt will come to understand better why medical practitioners through the ages have devoted their lives to bettering the health and happiness of mankind.

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MEDICAL ETYMOLOGY—The History and Derivation of Medical Terms for Students of Medicine, Dentistry, and Nursing. By O. H. Perry Pepper, M.D., Professor of Medicine, University of Pennsylvania. W. B. Saunders Company, Philadelphia, 1949. \$5.50.

This small volume, the first comprehensive work on medical etymology, will prove of great interest to any philologist, whether or not he is a doctor. For Dr. Pepper has done a stimulating and often witty—if not always thorough—job of classifying and tracing the derivation of some 4,000 medical terms. Because the book was planned principally for the use of the medical or dental students, it is divided into an introduction and separate sections for preclinical subjects, clinical subjects and dentistry. Any medical reader, however, will find these divisions handy for reference. The introduction, with its discussions of the background of medical terminology, prefixes, suffixes, compounds and transliteration, eponyms and onomatopoeic words, is unusually pertinent and interesting.

This book should not be confused with a dictionary. Dr. Pepper often does not bother to define the terms he discusses. (When he does, he is apt to come up with such a definition as, "Odontalgia—a ten dollar word for toothache.") Instead, he devotes himself to a series of enthusiastic running comments on the history and derivation of these words. Readers will find these discussions strongly flavored with Dr. Pepper's lively personality—and his occasional prejudices and inconsistencies. For Dr. Pepper proves somewhat of a Don Quixote. He fences against the use of eponyms. While obviously fascinated with existing medical terms and their derivations, he finds many of them difficult and he advocates unusually free modification of them. He defines and traces the derivation of the names of all the larger branches of medicine except his own—internal medicine. However, he does derive diagnosis from the Greek, *dia*=apart, and *gnosis*=knowing. And he states: "The word physician is derived from the ancient Latin word *physicus*=physical philosopher." . . . "Doctor (L. *doctor*=a teacher) was the highest degree in medicine, law or theology given by the medieval universities. . . . Let these words suffice." Could it be that Dr. Pepper doesn't "gno" the derivation of "internist"?

Whether or not this volume will prove as valuable to medical and dental students as Dr. Pepper hopes, is debatable. (Is the knowledge of derivation of words really of any great help in recalling and associating them?) At any rate, it makes for provocative and enjoyable reading. The last word given in it is xerostomia, from the Greek *xeros*=dry and *stoma*=mouth. "This results," Dr. Pepper writes, "from several causes, including the reading of this book through to the end." The reviewer, for one, didn't find this so.